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THE PEACE CORPS EDUCATIONAL TELEVISION (ETV) PROJECT IN COLOMBIA--TWO YEARS OF RESEARCH. RESEARCH REPORT NO. 4, THE COLOMBIAN TEACHER AND THE UTILIZATION VOLUNTEER--MAKING ETV WORK IN THE SCHOOLS OF A DEVELOPING COUNTRY.

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TO FOCUS ON THE DAILY USE OF ETV IN COLOMBIAN SCHOOLS AND ON THE IMPACT OF THE PEACE CORPS UTILIZATION VOLUNTEERS WHO PROMOTED THE EFFECTIVE USE OF TV, SEVERAL SURVEYS WERE CONDUCTED WITH COLOMBIAN TEACHERS DURING 1964-65, THE LARGEST WITH 1,884 TEACHERS AT THE END OF THE SECOND SEMESTER IN 1965. IT WAS FOUND THAT NON-TEACHING PROBLEMS CONSISTUTED A CONSIDERABLE OBSTACLE TO SUCCESSFUL USE OF TELEVISION. THESE INVOLVED PHYSICAL FACILITIES, SCHOOL ORGANIZATION AROUND TELEVISION USE, AND TECHNOLOGICAL ASPECTS OF TELEVISION USE. THE HIGH FREQUENCY OF THESE PROBLEMS INDICATED THAT "SCHOOL DEVELOPMENT" WAS THE MOST IMPORTANT TASK FOR THE VOLUNTEERS, RATHER THAN, AS ANTICIPATED, ADVISING TEACHERS ON USE OF TELEVISED INSTRUCTION IN THEIR OWN TEACHING. THE RESULTS SHOWED A HIGHLY SIGNIFICANT ASSOCIATION BETWEEN VOLUNTEER HELP AND THE MINIMIZATION OF THESE NON-TECHNICAL PROBLEMS. THE MAJORITY OF THE TEACHERS WANTED AS MUCH IF NOT MORE CONTACT WITH THE VOLUNTEERS. CONCURRENTLY, TEACHERS' CONTACT WITH COLOMBIAN OFFICIALS INCREASED CLEARLY, WHICH WAS INTERPRETED AS A SUCCESSFUL STEP TOWARD A PLANNED COLOMBIAN TAKEOVER OF THE PROJECT. (OH)

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INSTITUTE FOR COMMUNICATION RESEARCH
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THE PEACE CORPS EDUCATIONAL TELEVISION (ETV) PROJECT IN COLOMBIA -- TWO YEARS OF RESEARCH.

Research Report No. 4:

The Colombian Teacher and the Utilization Volunteer -- Making ETV Work in the Schools of a Developing Country.

By George Comstock and Nathan Maccoby

EM 006 147

This research was conducted under Peace Corps Contract No. W-276, entitled, "To Provide Continuous Information on the Effectiveness of the Peace Corps Educational Television (ETV) Project in Colombia." This is one of 12 volumes in a series, The Peace Corps Educational Television Project in Colombia--Two Years of Research. Titles of the other volumes and some brief facts on the ETV Project and on the research can be found at the end of this report.

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In this report on the research we conducted on the Peace Corps Educational Television (ETV) Project in Colombia, we will focus on two major issues. These are:

---*The problems brought to the Colombian public elementary school by the use of the modern electronic medium of television for daily instruction*. What kinds of problems occurred? How widespread were these problems? Which problems were most frequent?

---*The impact of the large number of Volunteers assigned to work with the teachers in the schools to promote the effectiveness of the televised instruction in solving the problems brought by television*. Did the teachers believe that the Volunteers helped them? Did the Volunteers really make a difference? Just how much contact was there between Volunteers and teachers? Was it sufficient?

To answer such questions we will turn to the persons most directly concerned---the Colombian public school teachers. During our two years of research in Colombia we surveyed several thousand teachers who were using the television regularly in their classrooms. From their replies, we are able to give a thorough and detailed account, and one that---because it is free of the bias that always threatens judgments based solely on observation---is particularly valid.

In addition to examining these two issues, we will also present findings bearing on other questions from our surveys. Of special interest are findings reflecting the success of the Peace Corps in transferring responsibility for instructional television to Colombians.

Background

There are two kinds of background information that will help to place the findings in perspective. One concerns the reasons for our great interest in the work of the utilization Volunteer---the Volunteer who was assigned to work with the teachers in the schools on the effective use (thus the term "utilization") of the television. The other concerns some of the findings on the utilization Volunteer that are covered in the other reports in this series.

Initially, our concern with the utilization Volunteer was dictated by the very sizable concentration of Volunteers, both in absolute and relative terms, in this specialized assignment. Since the inauguration of the ETV Project in Colombia at the beginning of 1964 through the end of 1966, between 77 and 88 Volunteers have been engaged full-time in the project in various tasks at various periods.[1] Of the total at any time, about two-thirds have been utilization Volunteers. Of the remainder, most have been assigned to television production, with a few serving as technicians for the installation and maintenance of TV sets in schools and the servicing of studio equipment. In terms of manpower, then, the utilization Volunteer has represented the Peace Corps' major involvement in the ETV Project. As a result, any attempt to assess the effectiveness of the Peace Corps in the instructional television project in Colombia must give considerable attention to the performance of these Volunteers.

In addition to the importance deriving from their sheer number, the utilization Volunteer also concerned us because of the sophistication of the belief that the successful implementation of instructional television requires assiduous attention to the way it is really used in the classroom. In the Colombia project, the television has not been intended merely to complement or enrich a curriculum. Instead, it has been designed to provide the "core" of instruction, with the goal of dramatically modernizing, unifying, and up-grading the curriculum. As a consequence, any deficiencies in its use in the classroom is not a minor loss, but a major setback.

To accomplish this goal, the ETV Project televised, during both semesters of each year involved, 10 different elementary level courses in 1964, 15 in 1965, and 16 in 1966.[2] In addition, there has been special television for the in-service training of teachers and for adult instruction in literacy and health. Each of the elementary level courses has consisted of two 15-minute telecasts a week throughout a semester. In this program the school teacher has not been relegated to an inactive role. Instead, he has been expected to teach in partnership with the television, providing 15 minutes of pre-telecast instruction (called "motivation") and 15 minutes of post-telecast instruction (called "follow-up") for each televised lesson. He also has been expected to make any teaching in the televised subjects at other times conform to the television schedule and pace. Thus, his partnership has been on at least a two-to-one basis.

The utilization Volunteers were assigned to insure that this ambitious program functioned in the schools as intended. They were to guarantee the fact in addition to the facade of televised instruction assured by the presentation of the broadcasts. Since television would seem to hold great promise for partially solving the imposing educational problems of developing countries---grossly insufficient numbers of skilled teachers, shortages of books and teaching aids, growing and presumably more demanding populations, outmoded curriculae, marked disparities between educational opportunities for various social strata and rural and urban populations, and the like, all in a context in which needs and desires seem to be outracing resources---we were extremely concerned with the impact these Volunteers might have. Were they, or someone like them, really necessary for the success of this kind of educational innovation? What would the nature of their contribution, if any, be?

For these reasons, we gave a great deal of attention in our research to the utilization Volunteer. We found much that should help to guide instructional television projects in the future, including the operations of the ETV Project in Colombia.

One set of findings led to a reconsideration of the role appropriate for this special kind of person. Originally, the role conceived for the utilization Volunteer by the Peace Corps was that of teaching consultant. Presumably, he was primarily to advise teachers on how they could alter their teaching practices to augment more effectively the televised instruction. As a by-product, it was expected that the quality of teaching generally, even apart from television, could be improved through the Volunteer's counsel.

Over the span of the project's first semester during the first half of 1964, we conducted a large field experiment comparing the achievement of over 7,000 pupils with and without television and, for those with television, of pupils taught by teachers receiving varying degrees of attention and counsel from the utilization Volunteer. In technical terms, then, the "independent variables" were the television and the advice imparted by the Volunteer. The results, although showing some positive gains attributable to the project's new instructional program as a whole, did not show large or in any way encouraging gains directly attributable to the Volunteer's counsel.[3]

This finding, coupled with data from interviews with teachers and Volunteers and our own observations, increased our interest in the utilization Volunteer, for we also found that much of his time was consumed by problems involving the operation of television in the schools but not directly concerned with teaching. As we will show in this report, these problems--whose pervasiveness and seriousness were largely unexpected by the Peace Corps--involved the physical facilities necessary in a school for good television use, the organizational adaptation of the school to television use, and such technological aspects of television as set adjustment and power supplies.

Our concern with improving the Volunteer's effectiveness in changing the teaching behavior of teachers led to two experiments. One, involving Colombian teachers and their pupils as subjects, was concerned with developing techniques which the Volunteers could readily impart to the teachers to increase pupil achievement when learning from television.[4] The other, involving only Colombian teachers as subjects, was concerned with developing better tactics which the Volunteer might employ to persuade the teachers to follow his advice.[5] Together, these experiments provided some guide as to what the teachers might feasibly be taught by the Volunteer, and how they might be most effectively taught.

We also became concerned with the accurate specification of the utilization Volunteer's role, which it soon became apparent involved "school development" for ETV as well as consulting on teaching. This augmented role of the utilization Volunteer is thoroughly documented in the analysis of over 300 "critical incidents" collected from the Volunteers in early 1965, which allowed us to empirically delineate their actual role as it had evolved under the pressure of necessity, in another report in this series.[6] Among other things, we found that full attention to teaching could only come after several weeks or more of intensive "school development," and that often there was little time left for it before the Volunteer had to shift attention to new schools as the receiving network expanded. One of the things we will examine in this report is the striking magnitude of this "school development" task, and the Volunteer's effectiveness in dealing with it.

We began our series of surveys of Colombian school teachers using television shortly after we arrived in Colombia in January of 1964. The first survey was completed before the telecasting of instruction began, and gave us a set of data on teacher attitudes and expectations prior to their actual experience with the Peace Corps project. At the end of this first semester, we surveyed some of the same teachers again. This body of matched data allowed us to make a number of findings regarding the initial impact and operation of the project, which we present in detail in our report on research concerned with the project's inaugural semester.[7] Among the more important ones was the finding that attention from the Volunteer helped to maintain and build favorable attitudes among the teachers toward the new program. Thus, although the field experiment of the same period indicated that the Volunteer's counsel to the teacher did not have a great effect on pupil achievement, there was evidence that the Volunteer's efforts had been important in gaining acceptance for the project. This, of course, is of crucial consequence when the teacher is asked to do so much in partnership with the television, as was the case in Colombia, and when the television brings so many new problems to the school, as we shall see in this report. Another finding, of considerable importance for the organization and direction of a Volunteer program of this sort, was that the Volunteer showed some favoritism in his attention for teachers with a generally favorable attitude toward the television project.

Because we found the results of these early surveys so useful, we conducted similar surveys of teachers using television with whom Volunteers had been working at the end of each of the succeeding semesters during our two years in Colombia. These surveys covered the second semester (July-November) of 1964, the first semester (February-June) of 1965, and the second semester (July-November) of 1965. As we will explain, it is with the data from these end-of-semester surveys, including the survey at the end of the project's inaugural semester (the first semester of 1964) which provided the second half of our matched data on this semester, that we will deal in this report. Primarily, we will draw on the data from the final 1965 survey since it had the largest number of respondents, covered the ETV Project's receiving network most comprehensively, and are the most recent data available.

Organization of the Report

In Part I, we review our survey methods, the survey returns, and the way we have treated the data. In the following sections, we begin with relatively broad descriptions of our survey results which, in addition to the findings themselves, provide an introduction to the principal variables on which we have measurements. Then, we subject these variables to more complicated analyses in order to answer the questions in which we are interested. In Part II, we describe the kinds and actual occurrence of the problems television brought to the schools. In Part III, we examine some data that indicates some success for the Peace Corps in transferring responsibility for ETV at the school level to Colombians. In Part IV, we look at some data on teacher communication generated by the ETV Project. In Part V, we turn to some evidence on the amount of help the Volunteer was able to give the teacher in solving school television problems. In Part VI, we subject the evidence on the impact of the Volunteer to a number of rigorous tests. In Part VII, we examine whether help from the Volunteer deters reliance on local

Colombian officials concerned with ETV. In Part VIII, we return to the question of Volunteer impact, this time by using our survey data to compile case histories on two areas--one where Volunteer attention was intensified to counteract an unusual spate of problems, the other where Volunteer attention was reduced after the orderly introduction of television; each time, we are interested in the effects of the change in Volunteer attention. In Part IX, we examine the teachers' ratings of the quality of the Volunteer's advice and his preparation for his role. In Part X, we present a detailed account of the actual frequency of contact that occurred between Volunteers and teachers in the ETV Project, which provides a basis for judging the adequacy of the number of utilization Volunteers serving in the project. In Part XI, we briefly summarize and discuss our major findings.

Part I: Data Sources and Analysis

The data on which we will report come from a series of surveys of the Colombian school teachers who, with TV sets installed in their schools, were presenting the televised instruction daily to their pupils. These were the teachers using the television as the "core" of instruction with whom the utilization Volunteers worked.

The surveys were conducted at the end of each full semester of televised instruction, and included only teachers who had been using the television for almost all of the semester covered by the survey or longer. During our two years of field study in Colombia, 1964 and 1965, we conducted four of these end-of-semester surveys--one at the end of each semester, of which there were two each year.

The survey data comprise a "teacher's report" on the project and the Volunteers. Before we turn to our findings, we will review briefly the methodology and samples. We will also discuss some aspects of the way we treated the data in our analysis in the hope of anticipating some of the questions that may arise.

Methodology:

For the most part, we used a procedure in which the questionnaire was personally delivered to the teacher by the Volunteer and later returned independently by mail. Despite the teachers' unfamiliarity with this or any other kind of opinion surveying, we found this to be a very successful technique. This was fortunate, for we did not have the funds or personnel for maintaining a large team of interviewers without sacrificing much of the other kinds of research that we also wished to do.

In this procedure, the utilization Volunteers delivered the questionnaires to the teachers in a school, urged them to complete the questionnaires and answered any questions, and the teachers completed the questionnaires in private and mailed them directly back to our Bogota research office. The questionnaires were accompanied by a letter explaining our great interest in what the teachers could tell us and assuring the teachers that their replies would be kept confidential. The letter also emphasized our status as independent researchers studying this particular Peace Corps project, indicated that the results could help to improve the project, and made it clear that we were solely concerned with the overall picture and not with any individuals--teachers or Volunteers. A stamped, addressed return envelope was supplied.

In addition to completing the questionnaire, the teachers were asked to include their name, school, and city on a coupon at the bottom of the first page. Primarily we wanted this information so that we could keep track of the returns and would be able to make breakdowns by area, community, and even school. However, in our opinion it also increased the importance of the questionnaire and made it more personal in the eyes of the teacher. We encountered no resistance to this request during our two years of surveying. In this particular case, we think this open approach was far preferable to any clandestine coding scheme, for we doubt that it would have gone unnoticed and, if not, would have led to skepticism over the sincerity of our promise of confidentiality. Since this procedure is contrary to the customary practic of supposedly unobtrusive questionnaire identification, we should probably add that we have no findings that we can imagine as being affected in any serious way by any conceivable bias that might have been introduced by requesting open identification. On the contrary, in this particular case we suspect that non-identification would have encouraged multiple replies from individuals, especially from school principals who might have been tempted to complete their teachers' questionnaires for them.

The questionnaires consisted largely of multiple-choice questions and checklists except for a very few open-end items. They were in two sections. The first section measured the teachers' reactions to the various courses that were being televised for their pupils, including their dissatisfactions with each course. An extensive, detailed analysis of these data is presented in another report in this series.[8] The second section measured more general attitudes, communicatory behavior relevant to the project, and certain operational aspects of the project. Of particular interest are measurements of the amount of help received from the utilization Volunteer, the problems brought to the school by the adoption of television, and the actual pattern of contact between Volunteers and teachers. It is with the data from this second section that we will be concerned in this report. Many of the items are reproduced in the text along with our findings; those that are not, and Spanish versions of all items, can be found in the appendices to our review of feedback techniques for a project such as the ETV Project in Colombia (Report No. 10, this series).

We should also explain that it was necessary to reach the teachers personally at their schools without prior sampling of individuals because reliable lists were not available, and even if they had been, direct mailings to schools could not be counted on. In the circumstances, the utilization Volunteers were the only reliable source of information and means of contact with the teachers. However, we did not feel it was practical to ask the Volunteers to compile lists and sample for us, since the risk of non-uniform procedure would be high and the time required an imposition. As a result, our usual procedure was to survey all the teachers in the schools in any area that could be covered by Volunteers. Thus, our samples consisted of the entire universe of teachers using television in specified areas, with the latter determined by the availability of Volunteers to deliver questionnaires. This "zone saturation" scheme made research possible under conditions that otherwise would have prohibited it.

The Samples: The areas covered, the numbers of teachers responding, and estimates of the proportion of the samples responding, for the four end-of-semester surveys were as follows:

Survey	Areas	Teachers Responding	Per Cent of Sample (Universe)
End of First Semester, 1964**	Bogota Cundinamarca*	252	87
End of Second Semester, 1964	Bogota Ibague	130	41
End of First Semester, 1965	Tolima* Boyaca* Medellin	874	72
End of Second Semester, 1965	Bogota Cundinamarca* Tolima* Boyaca* Antioquia* Caldas*	1,884	60

**First semesters run Feb.-June; second semesters, July-Nov.

*Departments (states). Ibague is included in Tolima, and Medellin is included in Antioquia; televised instruction was introduced first in these larger cities, the capitals of their Departments, and in subsequent semesters other areas were included.

We should note some exceptions to our general procedure. There were two exceptions to the "zone saturation" technique. One involves the survey at the end of the first semester of 1964 (the first one listed), which covered a sub-sample of about 750 teachers responding to a survey conducted before telecasting of any instruction began (our findings from this study of teachers before and after a semester of Peace Corps television are reported in our review of our research on the project's inaugural semester, Report No. 2, this series). The other involves the survey at the end of the second semester of 1965 (the last one listed), in which in Cundinamarca a sample of half the communities with television schools was drawn to facilitate questionnaire delivery by the relatively few utilization Volunteers working at that time in this Department, where television had been introduced two years before. Of course, certain areas within the geographical boundaries specified also were omitted when there were no Volunteers there at the time of a survey.

There was also a major exception to our personal Volunteer delivery mail-return procedure. This occurred in Ibague for the survey at the end of the first semester of 1965 (the third one listed), where the questionnaires were completed at a mass meeting of all teachers. This meeting, called by Colombian school officials in Ibague at the urging of the Peace Corps Volunteer who was directing utilization in Tolima (the Department of which Ibague is the capital) to help our research, allowed us to obtain data from over 175 teachers which otherwise the absence of a Volunteer utilization team in Ibague at the time would have prohibited.

We should probably also note that the return for the survey at the end of the second semester of 1964 (the second one listed) was unusually low for rather special reasons. In Bogota, the reason involved another exception to our usual procedures. Because there were very few Volunteers there at the time, the questionnaires were distributed through Colombian school supervisors to a sample drawn from our previous surveys in Bogota, and these officials simply did not provide the motivation to return the questionnaires that the Volunteers supplied on our behalf. In Ibague, the teachers went on strike over non-payment of salaries just as the Volunteers were finishing distribution, so that those who did not return the questionnaire immediately forgot about it.

The Analysis: We will give most of our attention to the final survey of 1965 since it is the largest, the most recent, and covered more areas. However, we will also draw from the other surveys, except for that covering the second semester of 1964, which we will ignore because of the small number of respondents and very low rate of return.

To avoid confusion, we should add a note on our tabulating of percentages. When dealing with multiple-choice items we have eliminated non-responses, so that the base is limited to those actually answering each question. Thus, the "N" (number of respondents) for such presentations is always less than the total number of questionnaires returned in the survey. Naturally, the attrition is particularly noticeable when the answers to two or more questions are considered jointly (cross-tabulations), since the results represent only those answering both questions (and the "N" cannot exceed that for the item with the fewest number of replies). This procedure makes all percentages directly comparable since minor (and irrelevant) variations in the non-response rate need not be considered. Generally, the item non-response rate ran from about five to about seven per cent.

When dealing with checklists, the base is always the total number of questionnaires returned since there is no way to distinguish a "non-response" from an intended answer of "no" (in both cases, the item would be left unmarked), As a consequence, the results for checklist items should be taken as slight underestimates of the true frequencies (since the base undoubtedly includes a few respondents who ignored the item).

Part II: Teacher Problems in Using Television

During 1964, our first year of research on the ETV Project, one of the most striking aspects of the Peace Corps' attempt to build a receiving network of schools was simply that there was an unexpectedly large number of problems outside teaching itself in achieving regular viewing by pupils under reasonably good conditions. These problems posed a serious threat to pupil exposure to the television. In fact, we could imagine an instructional television venture failing because of them, whatever the virtues of the televised instruction, as the consequence of not reaching its audience. We decided to try to measure these problems as accurately as possible, since it seems likely that the same kinds of difficulties would occur in the schools of any developing country trying to use television on a large scale for education.

As a result, we constructed a "problem inventory" or "problem scale" for inclusion in our end-of-semester surveys during 1965. We based this measuring device on hundreds of actual accounts of difficulties encountered in the schools. The principal source was a set of more than 300 "critical incidents" which the utilization Volunteers recorded in "problem diaries" under our supervision during the early part of the first semester of 1965. Each incident consisted of the description of a problem the Volunteer had had to deal with in making ETV effective in the schools. From these, and from less formal reports from Volunteers, teachers, and school officials, we compiled a lengthy catalogue of school television problems. We then grouped these by kind of problem. Next, we developed items which covered each kind of problem.

When done, we had a 14 item checklist of school television problems. In order not to tire the teacher with a single long checklist and thereby impair the accuracy of his reporting, we divided the 14 items into two separate checklists for questionnaire use. In one we placed six items concerned with the environment in which the pupils actually watched the television. In the other we placed eight items concerned with difficulties in making the television available to the pupils--problems of scheduling, movement in and out of the television room, electricity, and the like.

The six item checklist concerned with the viewing environment was as follows:

> In regard to the room where the children watch the televised courses, which of the following has been a problem in your class during the past semester? Check all that apply. If none apply, check none.
>
> _____The room is not dark enough.
>
> _____There are not always enough seats and benches for all the children.
>
> _____The TV set is not located in a proper place in the room so that all the children can see it.
>
> _____There are so many children in the room that many cannot sit comfortably or watch undisturbed.

_____Frequently, there is interference from outside noise in the television room.

_____Although there is no interference from outside noise, the children often are unable to hear the sound clearly because reception is bad.

The eight item checklist concerned with more general problems was as follows:

> Which of the following difficulties have you encountered in using television during the past semester? Check all that apply. If none apply, check none.

_____The classes are not able to change from room to room efficiently, and there is much confusion, so that much time is lost.

_____The electricity often fails.

_____Although the electricity is good, the TV set often does not work.

_____The TV set is so complicated that although it works, it is difficult to adjust for clear image and sound.

_____The television schedule conflicts with recreation periods.

_____There never seems to be sufficient time before and after the televised programs for the appropriate "motivation" and "follow-up".

_____The television schedule conflicts with religious activities.

_____The television programs make the children undisciplined.

Before going on, we would like to call attention to content and range of the items since their derivation from an empirically collected inventory means that they constitute a summary of the major kinds of problems the project was meeting in the schools. They also tell us quite a bit about the job of the utilization Volunteer, for these were the problems with which he had to deal if instruction by television was to be a reality.

We find that viewing rooms (there was usually one TV set per school) were often not dark enough, lacked seating, had the TV set badly placed, were overcrowded, filled with outside noise, and often sound reception was not good enough for the children to hear. We find instruction time lost because classes do not move efficiently in and out of the viewing room, electricity fails, TV sets fail, inexperienced teachers are baffled by set adjustment, conflicts with recess, lack of time for the teacher to do his partnership teaching with the television, conflicts with religious obligations, and discipline problems.

These are the kinds of problems that occur when the electronic medium of television with its rigid schedules and special demands is introduced into the schools--ill-equipped, under-staffed, with teachers set in old ways and generally under-trained and poorly educated--of a developing country. How frequent were these problems? What success did the Volunteer have in helping to solve them?

We will answer the first question in this section, and the second later in this report. First, however, we will factor analyze the problem data so that the data can be presented in a more orderly fashion.

The Major Types of Problems: We factor analyzed the results from the 1,884 teachers in the final survey of 1965 so that we could group the 14 items according to the correlation of problems with each other. In addition, a factor analysis also would indicate whether some of the items were so overlapping that they should not be considered as measuring individually distinct kinds of problems.

The factor analysis is shown in Table 4:1. Our grouping of the items is shown in Table 4:2.

The procedure was a principal axis factor analysis, varimax rotation (four - fold point r's, since all items were dichotomous). We stopped extracting factors when the Eigenvalues dropped below 1.0. At this point, we had extracted four factors for the 14 items.[9]

The factor loading is an index of the amount of variance in item response attributable to the underlying factor. The square of each factor loading gives the proportion of this variance "falling in," "correlated with," or "explained" by the factor. Thus, a factor loading of .60 means that 36 per cent of the variance can be attributed to the factor. The sign of the loading, plus or minus, indicates how responses to the item related to the factor--positively or negatively. Because it is the square of the loading that indicates the amount of variance attributable to the factor, the importance of an item in a factor grows progressively with every increase in the size of the loading (for example, a loading of .40 represents 16 per

Table 4:1: Factor Analysis of Teacher Problems with Television

Item Number	H^2	Factor (Loadings) -- Varimax Rotation			
		I	II	III	IV
1	.38	.19	.50*	.30*	-.04
2	.17	.16	.13	.36*	.05
3	.45	.11	.05	.65*	.14
4	.52	.08	-.02	.72*	.02
5	.47	-.04	.63*	-.13	.25*
6	.47	-.13	.65*	.11	.13
7	.68	-.01	.07	.04	.82*
8	.15	.08	.27*	.19	.18
9	.32	.34*	.34*	.29*	-.08
10	.74	.83*	-.05	.14	.16
11	.40	.23*	.12	.17	.55*
12	.67	.80*	.09	.11	.09
13	.43	.33*	.51*	.08	-.23*
14	.57	.00	.17	.74*	.05

N = 1,884

*loadings > .20; an item's heaviest loading is underlined.

Item Key:

1 = The classes are not able to change from room to room efficiently, and there is much confusion, so that much time is lost.
2 = The electricity often fails.
3 = Although the electricity is good, the TV set often does not work.
4 = The TV set is so complicated that although it works, it is difficult to adjust for clear image and sound.
5 = The television schedule conflicts with recreation periods.
6 = There never seems to be sufficient time before and after the televised programs for the appropriate "motivation" and "follow-up".
7 = The television schedule conflicts with religious activities.
8 = The television programs make the children undisciplined.
9 = The room is not dark enough.
10 = There are not always enough seats and benches for all the children.
11 = The TV set is not located in a proper place in the room so that all the children can see it.
12 = There are so many children in the room that many cannot sit comfortably or watch undisturbed.
13 = Frequently, there is interference from outside noise in the television room.
14 = Although there is no interference from outside noise, the children often are unable to hear the sound clearly because reception is bad.

Table 4:2: Grouping of Teacher Problems by Factor

Factor (Type of Problem)							
I		II		III		IV	
Physical Facilities		Organizational		Technological		Other	
Item*	Loading	Item	Loading	Item	Loading	Item	Loading
10	.83	6	.65	14	.74	7	.82
12	.80	5	.63	4	.72	11	.55
9	.34	13	.51	3	.65		
		1	.50	2	.36		
		8	.27				

*For content of item, see Table 4:1.

cent of the variance and a loading of .80 represents 64 per cent, so that a mere doubling of the loading involves a four times increase in attributable variance). The value H^2 shown in Table 4:1 represents the total amount of item variance explained by the four extracted factors.

Now let us look at Table 4:1. The first thing that strikes us is that most of the loadings are relatively modest. Only three reach .80 (item 7, Factor IV; item 10, Factor I; and item 12, Factor I), and only two fall between .70 and .80 (item 4, Factor III, and item 14, Factor III). Thus, only five of the 14 items could be said to have about 50 per cent or more of their variance attributable to any one of the factors. The second thing that strikes us is that most of the H^2 values also are relatively modest. Only five reach .50, indicating 50 per cent or more of the variance is explained by the four extracted factors (items 4, 7, 10, 12 and 14). The third thing that strikes us is that there are no large negative loadings.

This evidence leads us to two important conclusions. One is that, on the whole, there is very little overlap among the problems so that each should be taken seriously. Another is that there is no marked inverse correlation between problems so that a report of one kind of problem cannot be taken as implying the absence of any other problems.

Now let us consider what the factors represent. For grouping the items and identifying the factors, we arbitrarily set the cut-off, or minimum loading after rotation for serious consideration, at .20. All such loadings have been asterisked (*) in _Table 4:1_. Then for each item we looked at the heaviest of these loadings. These are underlined in _Table 4:1_. We then placed each item in a factor in accord with its heaviest loading, identified the factors on the basis of the content of the items with the heaviest loadings within each factor, and classified items with tied top loadings on two or more factors on a logical basis.

The resulting distribution of items is shown in _Table 4:2_. This shows our final grouping of the problems by factor. We find the characterization of the problem areas that is now possible extremely revealing.

In Factor I, we find problems involving the physical facilities of the school. Two of the three loadings reaching .80 are found here. These concern the lack of sufficient seating (item 10, .83) and overcrowding (item 12, .80). We placed the third problem, lack of darkness in the viewing room (item 9, .34) here because it seemed reasonable to consider it an aspect of physical facilities although it loaded equally highly on Factor II and almost as highly on Factor III (.29).

In Factor II, we find problems involving the organization of the school. Four items load fairly heavily here: lack of time for "motivation" and "follow-up" (item 6, .65); conflict with recess (item 5, .63); interference from outside noise (item 13, .51); and confusion and lost time in room changing (item 1, .50). A fifth item, discipline problems (item 8, .27), also had its heaviest loading here although the loading itself was of relatively low magnitude. These would all seem to represent difficulties in the school adapting its operation to the demands of the television.

In Factor III, we find problems involving the technology of television. Three items load fairly heavily here: inadequate sound reception (item 14, .74); difficulties in adjusting the TV set (item 4, .72); and TV set failure (item 3, .65). A fourth item, electrical failures (item 2, .36), also had its heaviest loading here although the loading itself was of relatively low magnitude. These would all seem to represent difficulties in making the TV set operate properly.

In Factor IV, we find two other kinds of problems. The heaviest loading is for conflict with religious activities (item 7, .82). The other item concerns TV set placement (item 11, .55). Since both would seem largely solvable by anyone interested in doing so, we suspect that what underlies their correlation is a certain intransigence or general hostility toward the innovation involved.

What we find, then, is that the problems are classifiable into three broad categories, physical facilities, organizational, and technological, with two falling in an "other" category. However, we can learn still more from this factor analysis.

Since the factors can be identified clearly on the basis of the problems that load on each relatively heavily and exclusively (do not have heavy loadings on other factors), the problems whose loadings are less exclusively concentrated can be considered as involving more than one of the broad types of problem. That is, they can be looked upon as the consequence of two or more of the factors--physical facilities, organizational, technological, or "other"--in combination. Problems of this kind include confusion and lost time in room changing (item 1), whose loading of .30 on Factor III (technological) probably reflects instances in which classes changed but the set failed in some way; lack of darkness in the viewing room (item 9), whose loading of .34 on Factor II (equal to the loading on Factor I, where we decided to group it)probably indicates that superior organization would lead to the solving of such problems, and whose loading of .29 on Factor III suggests that technological problems such as poor tuning or unclear images led to greater concern over darkness; and interference from outside noise (item 13), whose loading of .33 on Factor I suggests that this partly stemmed from poor physical facilities as well as poor organization. Such spread of loadings over more than one factor is important to note, for it indicates that these problems involve a complex set of elements and that there is not a single solution for any one.

The Occurrence of Problems: This section also might be titled "The Teachers' Report on Their Television Problems," for it is exactly that which our survey results provide. We included the problem checklists in both end-of-semester surveys in 1965. The results are shown in Table 4:3.

As can be seen, the outcome for both surveys is strikingly similar although the two were conducted about five months apart and each represents a different semester. There is one marked exception, and this particular instance is itself a finding with important implications.

This exception occurred in regard to conflict of the television with recess. The per cent reporting this problem rose from 16.5 to

Table 4:3: Frequency of Teacher Problems with Television

Problems	Per Cent of Teachers Reporting Each Problem at End of: First Semester 1965	Second Semester 1965
Physical Facilities:		
Insufficient seats in TV room	44.3	39.1
Too many children to watch undisturbed (overcrowding)	35.5	27.2
TV room not dark enough	30.0	33.1
Organizational:		
Insufficient time for "motivation" and "follow-up"	26.1	25.2
TV schedule conflicts with recess	16.5	32.8
Interference from noise outside TV room	19.6	19.7
Room changing necessitated by TV classes causes confusion	36.4	32.8
Discipline problems caused by TV	6.5	5.4
Technological:		
Poor sound reception	30.8	25.5
TV set too complicated to adjust for clear image and sound	24.4	20.1
TV set does not work	16.4	16.4
Electricity often fails	37.1	38.9
Other:		
Conflict with religious activities	8.1	7.7
TV set not placed so all children can see	7.1	7.6
N =	874	1,884

32.8 between the first and second semester. What intervened was a change in the television schedule, with the telecasts for several courses being repeated to reach a larger audience with each TV set and to reduce viewing room crowding.[10] The result was that, with more television, the possibility of conflict with recess also increased. What this implies is that even such simple changes, in this case a desirable improvement in service, cannot be undertaken without attention to their consequences at the point of reception. We suspect that the slight drop from 35.5 to 27.2 per cent in regard to overcrowding reflects the success of this change (the drop is not greater because the repeating of telecasts made it possible for classes previously excluded in a school also to use the television, keeping room occupancy relatively constant, and all schools did not take advantage of the repeats).

Now, let us see how frequent the problems actually were.

In regard to physical facilities, we find that:

About four out of 10 teachers reported that there were insufficient seats in the TV room. The figures are 44.3 per cent in the first survey and 39.1 per cent in the second survey.

About one out of three teachers reported that there were too many children for undisturbed viewing, or overcrowding. In the first survey, it was 35.5 per cent; in the second survey, 27.2 per cent.

About one out of three teachers reported that the TV room was not dark enough. In the first survey, it was 30.0 per cent; in the second survey, 33.1 per cent.

In regard to organization, we find that:

About one out of four teachers reported that there was insufficient time for "motivation" and "follow-up," the teaching they were supposed to do as a complement to the television. In the first survey, it was 26.1 per cent; in the second survey, 25.2 per cent.

About one out of six teachers in the first survey and one out of three in the second, or about twice as many, reported that the television conflicted with recess. The per cents were 16.5 and 32.8. We have already discussed why this occurred.

About one out of five teachers reported that there was interference in the TV room from outside noise. In the first survey, it was 19.6 per cent; in the second survey, 19.7 per cent.

About one out of three teachers reported that there was confusion and time lost because of the room changing necessitated by television. In the first survey, it was 36.4 per cent; in the second survey, 32.8 per cent.

Only about one out of 20 teachers complained that the television caused discipline problems. In the first survey, it was 6.5 per cent; in the second survey, 5.4 per cent. Apparently, the teachers did not feel that the television had caused them any new problems in this respect.

In regard to the technology of television, we find that:

About one out of four teachers reported that sound reception was inadequate. In the first survey, it was 30.8 per cent; in the second survey, 25.5 per cent.

About one out of five teachers complained that the TV set was too complicated to adjust; that is, about one out of five said they could not get the set to work properly. In the first survey, it was 24.4 per cent; in the second, 20.1 per cent.

About one out of six teachers said the TV set simply did not work at times. In the first survey, it was 16.4 per cent; in the second survey, it was also 16.4 per cent.

About one out of three teachers reported that electricity often failed, thus leaving them without television. In the first survey, it was 37.1 per cent; in the second survey, it was 38.9 per cent.

In regard to other problems, we find that:

Fewer than one out of 10 teachers complained that the television conflicted with religious activities. In the first survey, it was 8.1 per cent; in the second survey, 7.7 per cent.

Fewer than one out of 10 teachers reported that the TV set was not placed so that all the children in the room could see. In the first survey, it was 7.1 per cent; in the second survey, 7.6 per cent.

Neither of these problems, then, was perceived by the teachers as very frequent.

On the whole, these are rather astounding results. If we dismiss the three low frequency problems (discipline, conflict with religious activities, and TV set placement), and even if we consider conflict with recess as more of a complaint than a true problem, we are still left with 10 problems each of which apparently interfered with the successful teaching of from one out of six to four out of 10 teachers. There were very frequent problems with physical facilities, very frequent problems stemming from poor organizational adaptation to the demands of television, and very frequent technological problems.

We cannot over-emphasize the importance of these findings. They suggest that the best televised instruction in the world would falter at the point of the reception--the school--in a developing country unless special attention is given to such problems. The problems are particularly disturbing for this very reason, since they could easily go undetected or ignored in an operation solely concerned with its televised product.

By themselves, these data argue strongly that the role of the utilization Volunteer--whether filled by a Volunteer or someone else--is important, for they make it clear that attention at the school level is critical for instructional television in a developing country. We will present data later on the impact of the Volunteer in helping to solve these problems. However, we should note that their frequency is certainly less than it would be if the Colombia project were without such a person. We should also note that these data amply illustrate why the utilization Volunteer had to concentrate on "school development," or the solving of these problems, before he could give extensive attention to teaching methodology.

Part III: Some Evidence on a Special Kind of Peace Corps Success

One of the goals of the Peace Corps has been independent Colombian operation of the ETV Project. This has meant not only the training of persons in special skills, such as television production and teaching on television, but also the building of a Colombian ETV organization encompassing every phase of the project, from studio to school. One implication of this is that dependence on Volunteers must decrease, and dependence on Colombians increase, whatever the particular ETV job involved. We have some very impressive evidence from our teacher surveys that the Peace Corps has had some success in this effort at the school level.

We asked the teachers to choose from a checklist of persons and agencies associated with ETV, those to which they would direct a complaint, comment, or suggestion about ETV. We interpret the replies as reflecting the teachers' perception of who has a meaningful say in the project. The results for three surveys are shown in Table 4:4, spanning the years 1964 and 1965.

The first data comes from the survey at the end of the project's first semester (June, 1964). Here we find that the Volunteer is the overwhelming choice among the teachers as the communicatory target. He is named by 84.9 per cent of the teachers, and the next highest is the Instituto Nacional de Radio y Television, the national broadcasting organization involved in the project, named by only 13.1 per cent.

Table 4:4: Persons and Agencies to Which Teachers Would Direct a Comment, Complaint, or Suggestion about ETV, in 1964 and 1965

	Per Cent Citing Person or Agency in Survey of:		
Person or Agency	June, 1964	June, 1965	Nov., 1965
Peace Corps Volunteer	84.9	61.4	61.7
Special Department ETV Supervisor	*	39.5	46.1
Regular District Supervisor	11.9	26.0	26.0
School Director (Principal)	11.1	23.7	25.8
Instituto de Radio y Television	13.1	22.9	23.7
Television Teacher	**	19.6	15.0
Ministry of Education	3.5	2.4	4.3
Ministry of Communication	**	1.0	1.9
N =	250	874	1,884

*position not created until later
**not included in checklist in this survey
N = number of teachers responding to survey on which per cent is based

Others included the school supervisor for the teacher's district, 11.9 per cent; the school principal, 11.1 per cent; and the Ministry of Education, 3.5 per cent. The conclusion is inescapable that at this point the teachers perceived the project as primarily a Peace Corps undertaking.

This interpretation receives further support from the changes in the naming of communicatory targets over the first semester (it will be recalled that this particular end-of semester survey involved a sub-sample of teachers surveyed before telecasting began). As we reported in our collation of research on this first semester (Report No. 2, this series), there was evidence that naming of the Volunteer increased ($p. < .07$, two-tailed) and naming of the supervisor decreased ($p. < .01$, two-tailed). There was no other evidence of significant changes in regard to communicatory targets. It appears, then, that during this period dependence among the teachers on the Volunteer showed no signs of decreasing, either in relative or absolute terms.

The strong tendency of the teachers to look toward the Volunteer at this time is certainly understandable, for there were no Colombians especially concerned with ETV working at the school level. On the whole, the supervisors in Bogota and Cundinamarca, the areas then encompassed by the project, left television to the Volunteers. The Volunteers were simply the project's only representatives among the teachers, and the results indicate that they were fulfilling this function with some success. However, the overall pattern cannot be considered as desirable, since it suggests that for the teachers the television was not looked upon as much involving Colombians. We suspect that if Peace Corps participation in ETV were to end in these circumstances, effectiveness at the school level would be threatened because the teachers would lose what they viewed as their only channel of communication with the project.

Now, when we look at the data from the two surveys in 1965 we find some remarkable and gratifying differences. The first of these was exactly a year later, at the end of the project's third semester (June, 1965), and the second about a year and a half later, at the end of the project's fourth semester (November, 1965).

Here is what we find:

The Volunteer has dropped appreciably as the prime target for channeling communications about ETV. In the 1964 survey he was named by 84.9 per cent. In the first of these 1965 surveys, it is 61.4 per cent; in the second, 61.7 per cent.

Three Colombian persons and agencies have risen. The Instituto Nacional de Radio y Television has jumped from 13.1 (1964) to 22.9 (June, 1965) and 23.7 (November, 1965) per cent. The district supervisor has risen from 11.9 to 26.0 per cent in each of the 1965 surveys. The school principal has risen from 11.1 to 23.7 and 25.8

per cent.

A new Colombian person now commands a large percentage and stands second to the Volunteer. This is the special Department (state) level ETV supervisor, usually titled "ETV Coordinator." The post did not exist in 1964. In the first of the 1965 surveys, he received 39.5 per cent; in the second, 46.1 per cent.

These data can be interpreted as indicating appreciable gains for the Peace Corps in making the ETV Project a Colombian endeavor in the eyes of the teachers. In particular, they illustrate the success of the Colombian ETV Coordinator as a means of linking the school to the ETV system. However, the extent to which the latter represents an accomplishment for the Peace Corps will be overlooked unless we discuss how this post came into existence.

What these special Colombian officials--of which there were 13 by the end of 1966--represent is a successful adaptation to Colombian conditions on the part of the Peace Corps.[11] Some history is now necessary.

Before the project was inaugurated in 1964, the Colombian national government promised to provide 50 utilization counterparts for the Volunteers who would work in the schools. It was expected that after training by working in teams with the Volunteers, these Colombians would permit expansion of the receiving network at a faster rate and/or more intensive attention to individual schools, and that they would provide the basis for permanent Colombian supervision of television in the schools. Ostensibly because of financial difficulties, the national government never provided these counterparts.

However, it soon became apparent that continuing attention to the use of television in the schools would be necessary if the achievements of the Volunteers in building a receiving network were not to be dissipated. Such attention was necessary to contain and further reduce the myriad of problems outlined earlier which television brought to the schools; to give further in-service training in new classroom teaching techniques for use with television, for which little time had been left the Volunteers by the demands of these school problems; and to maintain and build ties between the teachers and the new instructional system in order to hold their interest and involvement. Since Departments administer their own schools and Department-centered regionalism is characteristic of Colombia, the Departments seemed a likely alternative to the national government for ETV support.

The building of Department-based ties began when the ETV Project expanded into Ibague, the capital of the Department of Tolima, for the second semester of 1964. As a condition for joining the project, the Peace Corps required that the Department appoint a special school supervisor for ETV. A similar policy was followed in Boyaca and Antioquia, Departments where television began in the first semester of 1965.

The problem in finding Colombian support for utilization was paralleled by difficulties in assuring Colombian maintenance of the TV sets. Presumably, the sets became Colombian property once installed in a school, and Colombia assumed responsibility for their maintenance. However, no agency or scheme was readily found to make such Colombian responsibility a reality. Again, the Departments seemed a likely answer. As a result, a combined utilization and maintenance commitment from the Department became a Peace Corps requirement for ETV participation.

Under this arrangement, each Department is required to provide two special ETV supervisors, a technician for TV installation-maintenance, a vehicle, and an annual budget for salaries, supplies, parts, and equipment. In addition, the Department must provide an ETV office. By the end of 1965, the project's second year, this was firm policy, although there has been variation between Departments in the degree of fulfillment.

As we point out in our report dealing with the ETV Project's organization and expansion (Report No. 1, this series), this maneuver has fitted Colombia's political and educational structure superbly. It has fitted the Departmental administration of education (the syllabus, however, is set by the national Ministry of Education, and it is this policy of a uniform national curriculum that has made national instructional television feasible). It recognizes that Departments may have funds when the national government does not. It makes possible compromises and adjustments to fit local circumstances. It involves local people thoroughly in the new instruction. It asks for support from those responsible for the schools which will benefit. Moreover, it acknowledges Colombia's regionalism by giving Departments a voice in ETV while still maintaining its unifying and nation-oriented influence as a national system providing uniform instruction throughout the country. It has also taken advantage of regionalism by making competition possible between Departments in successfully managing ETV.

Under this scheme, the Volunteers build the receiving network by spending about a semester working closely with the same group of schools. During this period they work in conjunction with the Colombian ETV Coordinator. Then, with the television schools functioning reasonably smoothly, they move on to new schools, leaving the Coordinator responsible for the old ones. The assumption, of course, is that less assiduous attention is required to maintain television education once it is established.

Given the circumstances, then, we feel that the data on communicatory targets measures an important achievement on the part of the ETV Project. The evidence is that this organizational innovation succeeded in establishing a school level Colombian ETV organization, and was accompanied by increased orientation of the teachers toward

Colombian persons and agencies in regard to ETV. The Volunteer dropped as a communicatory target; three Colombian persons and agencies increased; the new Colombian ETV Coordinator was being specified by a large per cent, and was second to the Volunteer.

The data also suggest the potential usefulness of a special Colombian ETV official at the local level. We infer this from his being named by many more teachers than any other Colombian person or agency. When a local person is made available, the teachers show definite signs of being ready to turn to him in regard to ETV.

In regard to Table 4:4, we should probably also note that in the two 1965 surveys the television teacher was named by 19.6 and 15.0 per cent of the school teachers. We suspect (although we don't know) that these figures also would represent a rise over 1964 had this possible target been included in the checklist at that time.

Part IV: Teacher Communication About the Television

We will now turn briefly to some descriptive data on the persons with whom the teachers regularly discussed the television project. These data are of interest because it would be hoped that an innovation of this kind would be sufficiently salient to the teachers to generate conversation about education.

We asked the teachers in the two 1965 surveys to choose from a checklist those persons with whom they regularly discussed ETV. We should emphasize that this is a very different issue from the naming of communicatory targets for complaints or suggestions. The latter reflect the perception of who has an important role in the project. The replies about conversations, on the other hand, measure actual communicatory behavior.

The results are shown in Table 4:5. We find that:

About four out of five teachers reported they regularly discussed ETV with their fellow teachers in the same school. In the first survey, it was 79.2 per cent; in the second, 76.8 per cent.

About half the teachers reported they regularly discussed ETV with the principals of their schools. In the first survey, it was 55.0 per cent; in the second survey, 55.6 per cent.

About half the teachers reported they regularly discussed ETV with teachers in other schools. In the first survey, it was 51.5 per cent; in the second survey, 45.0 per cent.

Table 4:5: Persons with Whom Teachers Frequently Discuss ETV

Kind of Person		Per Cent Citing Each Kind of Person in Survey of: June, 1965	Nov., 1965
Other teachers in same school		79.2	76.8
School Director (Principal)		55.0	55.6
Other teachers in other schools		51.5	45.0
Friends and acquaintances		34.3	31.4
Regular District Supervisor		19.2	24.4
Special Department ETV Supervisor		15.0	18.5
Parents		18.2	16.5
	N =	874	1,884

N = number of teachers responding to survey on which per cent is based

About one out of three teachers reported they regularly discussed ETV with friends and acquaintances. In the first survey, it was 34.3 per cent; in the second survey, 31.4 per cent.

About one out of five teachers reported they regularly discussed ETV with the district supervisor. In the first survey, it was 19.2 per cent; in the second survey, 24.4 per cent.

About one out of six teachers reported they regularly discussed ETV with the special ETV supervisor. In the first survey, it was 15.0 per cent; in the second survey, 18.5 per cent.

About one out of six teachers reported they regularly discussed ETV with the parents of their pupils. In the first survey, it was 18.2 per cent; in the second survey, 16.5 per cent.

In our opinion these are enlightening and in some respects encouraging data. We are not surprised that regular conversation was so frequent in both absolute and relative terms with teachers in the same school. Given the impact of television on the school, this would be expected. However, we are impressed that regular conversation occurred so often with teachers in other schools, for we suspect that this was communication about education that might not have taken place without ETV. We look upon the results for friends and acquaintances and parents in the same way, for the Colombian public school teacher, compared with the U.S. teacher, seems to have relatively little professional involvement outside the school. Of course, we would like to see these percentages even higher, especially in regard to parents with whom the teachers usually have almost no contact since the public school population comes from the lower social strata (anyone with an income above subsistence usually sends his children to tuition-supported private schools), but we think that it is gratifying that they are as high as they are.

We are somewhat surprised that regular conversation was relatively so less frequent with principals than with teachers in the school. We suspect this reflects what we often heard from Volunteers--that there is wide variation in the extent to which Colombian principals actively run their schools. Many apparently let their schools operate with little intervention, and with these principals, of course, a teacher would have little regular conversation about the television. We are not surprised that there were not more frequent reports of regular conversation with the special Department ETV supervisors since these people are responsible for too many schools for regular communication to occur on a wide basis.

Part V: The Impact of the Volunteer

We now turn to some data on the impact of the utilization Volunteer. We will begin by examining the degree to which the teachers felt the Volunteer had helped them and its relationship to actual contact with the Volunteer. Then, we will relate the teachers' expressions about help received--which are actually their perceptions of help from the Volunteer--to their actual experiences in regard to school television problems during a semester. This will tell us just what help from the Volunteer really meant to the teacher. Finally, we will examine the teachers' desires for further contact with the Volunteer--first in relation to actual previous contact, and second in relation to help received.

The source of the data will be the 1,884 teachers responding to the final end-of-semester survey of 1965, since this is our largest and most recent body of information from the teachers.

What the Teachers Said About Help from the Volunteer: We asked the teachers how much help they felt they had received from the Volunteer during the preceding semester. The possible replies were "great help," "some help," "a little help," and "no help." The results, broken down by intensity of the Volunteer effort in an area and an area's newness to the television program (as we will explain, the two go together), are shown in Table 4:6.

On the left of the table can be found the results for the sample

Table 4:6: Teacher Report on Volunteer Help

	Intensity of Volunteer Effort Within Areas Categorized by Recency to ETV			
Per Cent of Teachers Reporting Volunteer Gave:	ETV Introduced During Semester of Survey (2nd semester of 1965)*	ETV Introduced During Preceding Two Semesters (1st semester of 1965 or 2nd of 1964)**	ETV Introduced At Initiation of Project (1st semester of 1964)***	Total Sample
Great Help	51.7	35.8	24.2	37.1
Some Help	33.3	38.7	34.8	36.0
A Little Help	7.0	12.5	16.6	12.1
No Help	7.6	13.0	24.4	14.8
N =	511	746	500	1,757

*the Department of Caldas, and the Department of Antioquia outside the capital of Medellin
**the Department of Boyaca, the Department of Tolima, and Medellin
***the Department of Cundinamarca and Bogotá

N = the number of teachers on which the per cents are based as a whole (as with all the multiple choice questions, the N is less than the total sample because the percentages are based only on those answering the question). We find that 37.1 per cent said the Volunteer gave "great help," 36.0 per cent said the Volunteer gave "some help," 12.1 per cent said the Volunteer gave "a little help," and 14.8 per cent said the Volunteer gave "no help."

Now it must be understood that the Volunteer effort was not equal in all of the areas from which these teachers came. The Volunteers were concentrated in the areas more recently introduced to television, so that the opportunity for help was not the same. As a result, we have broken down the data into three categories: a) areas where the television was introduced for the first time for the semester covered by the survey (the Department of Caldas, and the Department of Antioquia outside the capital of Medellin); b) areas where the television was either introduced for the preceding semester (the Department of Boyaca, the Department of Tolima outside the capital of Ibague, and Medellin) or for the final semester of 1964 (Ibague); and c) areas where the television had been introduced during the project's first 1964 semester (the Department of Cundinamarca and Bogota). In order, these three categories represent decreasing intensity of Volunteer effort, with the ratio of schools to Volunteers dropping progressively.

Now we get some very interesting results. We find that help as reported by the teachers was directly related to the intensity of Volunteer effort. This is what Table 4:6 shows. In the areas new to television where Volunteer effort was intense, 51.7 per cent said they received "great help"; in the areas where television had been introduced some months earlier and Volunteer effort was moderate, 35.8 per cent said they received "great help"; and in the areas introduced to television when the project was inaugurated, where Volunteer effort was relatively minimal for the semester covered by the survey, only 24.2 per cent said they received "great help."

It should be no surprise, then, that when we relate help as reported by the teachers to a more precise measure of individual teacher contact with the Volunteer we find a striking association between help and contact. This new measure is the frequency with which the teacher said he regularly conversed with the Volunteer about the television innovation during the preceding semester. The possible replies to this conversation question were "twice a week," "once a week," "once every two weeks," "less than once every two weeks," and "rarely." The results for this breakdown are shown in Table 4:7. For teachers conversing twice a week with the Volunteer, 51.5 per cent said "great help"; for teachers conversing once a week, it is 59.0 per cent; for teachers conversing once every two weeks, it is 51.3 per cent. At this point, the decline begins. For teachers conversing less than once every two weeks, 42.2 per cent

Table 4:7: Teacher Report on Volunteer Helpfulness by Actual Contact with Volunteer During Preceding Semester

Per Cent Reporting Great Help Received Among Teachers Who Conversed with the Volunteer:

	Twice a week	Once a week	Once in two weeks	Less than once in two weeks	Rarely
	51.5	59.0	51.3	42.2	24.3
N =	130	195	224	199	885

N = number of teachers on which per cents are based

said "great help," and for teachers conversing rarely, only 24.3 per cent said "great help."

These sets of data lead us to two conclusions. One is that during the typical introductory phase of ETV when the Volunteers are most active in an area, about half the teachers (51.7 per cent for the areas of intensive effort in Table 4:6) feel that they get "great help" from the Volunteer. The other, and more important, is that perceived help is a function of what the Volunteer does when he has contact with a teacher for which greater contact gives increased opportunity.

What Volunteer Help Meant to the Teacher: We will now relate the teachers' reports on the degree of help received from the utilization Volunteer to the frequency with which they encountered problems in using television. This will tell us about the impact--or effectiveness--of the Volunteer in helping to solve these problems.

The data appear in Table 4:8, and we will examine it closely. For each of the 14 problems whose occurrence during the preceding semester we measured we show the results by degree of reported Volunteer help. What emerges is a striking association between problems and Volunteer help. We find that:

In regard to seating in the television room, 34.9 per cent of the teachers receiving "great help" said there were insufficient seats. Of those who received "some help," the figure is 38.1 per cent.

Table 4:8: Teacher Report on Volunteer Helpfulness and on the Occurrence of Problems with Television

Per Cent of Teachers Listing Each Problem for Teachers
Reporting Different Degrees of Help from the Volunteer

Problems	Great Help	Some Help	A Little Help	No Help	X^2	p.
Physical:						
Insufficient seats in TV room	34.9	38.1	48.6	54.0	35.90	< .001
Too many children to watch undisturbed	24.3	26.2	30.8	39.2	22.32	< .001
TV room not dark enough	22.9	34.9	39.3	51.1	77.95	< .001
Organizational:						
Insufficient time for "motivation" and "follow-up"	20.3	24.0	28.5	39.6	16.83	< .001
TV schedule conflicts with recess	28.4	37.0	30.8	38.9	14.45	< .01
Interference from noise outside TV room	15.1	24.0	24.8	21.1	18.48	< .001
Room changing necessitated by TV classes causes confusion	23.1	35.9	39.7	48.7	64.51	< .001
Discipline problems caused by TV	3.5	6.6	7.5	9.8	33.87	< .001
Technological:						
Poor sound reception	18.3	25.1	35.0	40.0	55.58	< .001
TV set too complicated to adjust for clear image and sound	14.8	19.3	29.9	30.2	40.02	< .001
TV set does not work	10.9	15.9	25.2	25.3	41.92	< .001
Electricity often fails	35.8	41.3	42.1	45.3	8.76	< .05
Other						
Conflict with religious activities	8.7	6.9	9.8	7.5	2.30	n.s.
TV set not placed so all children can see	5.0	6.3	13.1	12.1	24.75	< .001
					(each df = 4)	
N =	654	637	214	265		

Of those who received "a little help," it is 48.6 per cent, and of those receiving "no help," it is 54.0 per cent. As help decreased, the frequency of this problem increased progressively. The differences are highly significant (p. < .001).

This is the pattern--problems increasing as help decreases--that we find for almost all of the problems (there is only one exception). Let us go on:

In regard to too many children in the television room to watch undisturbed, or overcrowding, the figures are: "great help," 24.3 per cent; "some help," 26.2 per cent; "a little help," 30.8 per cent; and "no help," 39.2 per cent (p. < .001).

In regard to the television room not being dark enough: "great help," 22.9 per cent; "some help," 34.9 per cent; "a little help," 39.3 per cent; and "no help," 51.1 per cent (p. < .001).

In regard to insufficient time for "motivation" and "follow-up": "great help," 20.3 per cent; "some help," 24.0 per cent; "a little help," 28.5 per cent; and "no help," 39.6 per cent (p. < .001).

In regard to the television schedule conflicting with recess: "great help," 28.4 per cent; "some help," 37.0 per cent; "a little help," 30.8 per cent; and "no help," 38.9 per cent (p. < .01). In this instance the trend is not uniformly progressive, but the pattern clearly suggests greater frequency of problem with decreased help.

In regard to interference in the television room from outside noise: "great help," 15.1 per cent; "some help," 24.0 per cent; "a little help," 24.8 per cent; and "no help," 21.1 per cent (p. < .001). Again, the trend is not quite progressive, but there is no doubt about interpretation.

In regard to confusion and time lost resulting from room changing for television use: "great help," 23.1 per cent; "some help," 35.9 per cent; "a little help," 39.7 per cent; and "no help," 48.7 per cent (p. < .001).

In regard to discipline problems allegedly caused by television: "great help," 3.5 per cent; "some help," 6.6 per cent; "a little help," 7.5 per cent; and "no help," 9.8 per cent (p. < .001).

In regard to poor sound reception: "great help," 18.3 per cent; "some help," 25.1 per cent; "a little help," 35.0 per cent; and "no help," 40.0 per cent (p. < .001).

In regard to the TV set being too complicated to adjust: "great help," 14.8 per cent; "some help," 19.3 per cent; "a little help," 29.9 per cent; and "no help," 30.2 per cent (p. < .001).

In regard to the TV set not working: "great help," 10.9 per cent; "some help," 15.9 per cent; "a little help," 25.2 per cent; and "no help," 25.3 per cent (p. < .001).

In regard to the electricity failing: "great help," 35.8 per cent; "some help," 41.3 per cent; "a little help," 42.1 per cent; and "no help," 45.3 per cent (p. < .05).

In regard to conflict with religious activities there was only minor and irregular variation in relation to help, and the differences were not significant. This was an unimportant problem since it occurred relatively infrequently; from "great help" to "no help," the results were 8.7, 6.9, 9.8, and 7.5 per cent.

In regard to TV set placement so all the pupils could see: "great help," 5.0 per cent; "some help," 6.3 per cent; "a little help," 13.1 per cent; and "no help," 12.1 per cent ($p. < .001$). Although the final percentage breaks the progressive trend, there is again no puzzle over interpretation.

These are truly impressive results. Of the 14 problems, 13 decreased significantly as a function of Volunteer aid. The relationship was highly significant in 11 of these cases ($p. < .001$). In 10 of the cases the trend over the four degrees of Volunteer help was progressive, with problems increasing regularly as help decreased; in the other three cases the deviation from progressive increase was not of a sort to force a different interpretation. (The significance of the differences in each case was calculated by chi-square, with degrees of freedom = 4).

The importance of Volunteer help was particularly noteworthy for eight of the problems. This can be best seen by comparing the differences between problems for the two extreme degrees of help--"great help" vs. "no help." These eight problems were insufficient seats (34.9 vs. 54.0); overcrowding in the television room (24.3 vs. 39.2); the television room not being dark enough (22.9 vs. 51.1); insufficient time for "motivation" and "follow-up" (20.3 vs. 39.6); confusion and loss of time in room changing (23.1 vs. 48.7); poor sound reception (18.3 vs. 40.0); TV set adjustment (14.8 vs. 30.2); and TV set failure (10.9 vs. 25.3). For these quite frequent problems the increase for "no help" over "great help" ranges from about 60 per cent to well over 100 per cent. Two other problems that are less important because they were not generally so frequent could be added to this list on the basis of the gulf between their occurrence for "great help" and "no help": discipline (3.5 vs. 9.8) and TV set placement (5.0 vs. 12.1). These eight (or 10 if the generally less frequent pair of problems is included) come from all three of the broad problem factors. It is clear, then, that Volunteer help considerably reduced problems involving physical facilities, organization, and technology.

Some of these data may be confusing if the scope of the Volunteer's activity is not understood. In particular, we refer to problems of electricity failure, TV set failure, and sound reception. Ordinarily, these might seem beyond the influence of a school visitor such as the Volunteer. However, this is not the case in the Peace Corps ETV Project. The Volunteer acted as a catalyst, an organizer, a coordinator, a prompter, and, when necessary, a representative of the school with other officials. Often, electrical failures were not uncontrollable breakdowns but involved school wiring and the scheduling of power supply. In these instances, the Volunteer prompted action to correct the deficiency, prodding school people and officials (who could authorize repairs or adjust power schedules). We should also note that the impact of the Volunteer on this problem was comparatively slight (35.8 per cent for "great help" vs. 45.3 per cent for "no help"); the fact that much of this problem was extraneous to the normal run of school television problems is illustrated by the lowness of its heaviest loading among the extracted problem factors, .36 on the technology factor, indicating considerable independence from the other problems in its occurrence. Sound reception and set failure, of course, are related, and the teacher's interpretation of the difficulty is not always technically accurate and independent of set adjustment. With all these technological problems, the utilization Volunteers trained the teachers, most of whom had never operated a TV set before, in set use, corrected set operation when possible, and insured that deficiencies were corrected promptly by technicians. In short, the inverse correlation of these problems with Volunteer help simply illustrate the scope of the Volunteer's activities.

We conclude from these data that Volunteer help dramatically promoted the successful functioning of the television program in the schools. The evidence is that help during a semester markedly reduced the frequency of problems. The very important implication of this is that an instructional television project in a developing country requires someone to fulfill the role occupied by the utilization Volunteer in the Peace Corps program in Colombia if problems at the school level are not to take an excessive toll.

Teacher Desire for Volunteer Contact and Help: We asked the teachers whether they desired more, about the same, or less contact with the Volunteer than they had had during the semester. For the entire sample, 53.5 per cent said more, 42.3 per cent said the same, and 4.2 per cent said less (N = 1,561). Overall, then, an overwhelming majority of the teachers wanted at least the same amount of contact in the future.

We broke down the replies on desire for future contact with the Volunteer by actual contact during the preceding semester. The results are shown in Table 4.9. We find that:

Actual contact was inversely related to the desire for more contact. That is, the less actual contact a teacher had had, the more was he likely to want increased future contact. Let us look at these data. Among teachers conversing with the Volunteer twice a week, 26.7 per cent want more contact, and among teachers conversing once a week, 23.4 per cent want more contact. These are the two top contact categories. After these, as actual contact decreases,

Table 4.9: Teacher Desire for Future Contact With the Volunteer by Frequency of Actual Contact With the Volunteer

Per Cent of Teachers Desiring More, the Same, or Less Future Contact with the Volunteer Among Those Conversing During the Semester with the Volunteer:

Desired Contact with Volunteer:		Twice a week	Once a week	Once in two weeks	Less than once in two weeks	Rarely
More		26.7	23.4	34.7	50.0	69.4
Same		65.5	71.3	61.1	46.4	27.1
Less		7.8	5.3	4.2	3.6	3.5
	N =	116	188	216	192	849

N = number of teachers on which per cents are based

the desire for more contact rises. Among teachers conversing once every two weeks, the figure is 34.7 per cent; and those conversing less than once every two weeks, it rises sharply to 50.0 per cent; and among those conversing rarely, it jumps up to 69.4 per cent.

Even among teachers with relatively high actual contact, an overwhelming majority desire at least the same amount of contact in the future. Let us look at these data. Among teachers conversing with the Volunteer twice a week, 65.5 per cent want the same amount of contact and 26.7 want more contact, for a total of 92.2 per cent who want at least as much contact in the future. Among teachers conversing once a week, 71.3 per cent want the same and 23.4 per cent want more, for a total of 94.7 per cent who want at least as much in the future. After these two top contact categories, the per cent wanting the same degree of contact decreases but the per cent wanting more contact increases so that the combined per cent remains about the same. Among teachers conversing rarely, the minimum contact category, 27.1 per cent want the same and this combines with the 69.4 per cent wanting more for a total of 96.5 per cent who want at least as much contact in the future. The picture is the same for the in-between categories of contact--among those conversing once every two weeks, the combined per cent is 95.8 and among those conversing less than once every two weeks, the combined per cent is 96.4. Thus, regardless of actual previous contact, more than nine out of 10 teachers want at least as much in the future.

We interpret the inverse relationship between actual contact and desire for more contact and the uniformity of the desire for at least as much future contact whatever the degree of actual contact as indicating dissatisfaction with the frequency of contact among teachers in the lower contact categories, and satisfaction among those in the higher contact categories. This leads us to the question of what degree of contact might be considered ideal. The data in Table 4:9 suggest that once every two weeks is the best estimate. As contact decreases beyond this point, dissatisfaction increases (the desire for more contact) and satisfaction decreases (the desire for the same amount of contact), both to a marked degree. As contact increases above this point there are some signs of increased satisfaction and decreased dissatisfaction, but the changes are relatively slight. The evidence, then, suggests that from the teacher's perspective individual contact with the Volunteer at least once every two weeks is desired, and that contact of about that degree will satisfy the teacher's demands.

We also broke down the replies on desire for future contact with the Volunteer by the degree of help the teacher reported receiving from the Volunteer. The results are shown in Table 4:10. We find that:

Help received tended to be inversely related to the desire for more contact. That is, the less help the teacher had received, the more likely was he to want more future contact. Among teachers

Table 4:10: Teacher Desire for Future Contact With the Volunteer by Degree of Help Received from the Volunteer

Per Cent of Teachers Desiring More, the Same, or Less Contact with the Volunteer for Teachers Reporting that the Volunteer Gave Them:

Desired Contact with Volunteer:	Great Help	Some Help	A Little Help	No Help
More	52.2	44.8	63.6	70.9
Same	44.8	51.9	30.1	21.7
Less	3.1	3.3	6.2	7.4
N =	621	607	209	230

N = number of teachers on which per cents are based

reporting "great help," 52.2 per cent desire more contact, and among teachers reporting "some help," 44.8 per cent desire more contact. These are the two top help categories. As help received decreases, the demand for more contact rises sharply. Among teachers reporting "a little help," 63.6 per cent want more contact. Among teachers reporting "no help," 70.9 per cent want more contact.

In this breakdown the situation in regard to a desire for the same amount of future contact parallels that for actual contact. As help received decreases, the desire for the same amount of contact also decreases but the desire for more contact increases. The result is that for all categories of help received the per cent desiring at least the same amount of future contact is extremely high and roughly uniform. Among teachers reporting "great help," 44.8 per cent want the same and 52.2 want more, for a total of 97.0 per cent who want at least as much future contact. Among those reporting "some help," 51.9 per cent want the same and 44.8 per cent want more, for a combined total of 96.7 per cent; among those reporting "a little help," 30.1 per cent want the same but 63.6 per cent want more, for a combined total of 93.7 per cent; and among those reporting "no help," only 21.7 per cent want the same but 70.9 per cent want more, for a combined total of 92.6 per cent. Thus, more than nine out of 10 teachers, regardless of the degree of help received, want at least as much contact with the Volunteer in the future.

Even in the higher help categories the demand for more contact is quite high. The lowest demand occurs in the "some help" category. There, 44.8 per cent of the teachers want more future contact. In the other categories it is still higher: "great help," 52.2 per cent; "a little help," 63.6 per cent; and "no help," 70.9 per cent. We cannot offer with any certainty an explanation of why the per cent wanting more contact dips from "great help" to "some help" before beginning to rise, but we suspect the reason is a correlation in some instances between the initial quantity of problems and help received, so that some teachers receiving "great help" desire and probably need more Volunteer contact. However, the evidence is clear that, whatever the degree of help, almost half (44.8 per cent) or more of the teachers want increased future contact.

We interpret these data on help received and desire for future contact as indicating that teachers not receiving help from the Volunteer want more contact so they can have more help, that whatever the degree of help an overwhelming majority want at least as much future contact (more than nine out of 10), and that whatever the degree of help a sizable proportion of teachers--about one half or more--want more future contact. As help decreases, dissatisfaction with frequency of contact rises and demand for more contact increases, and as help increases satisfaction with frequency of contact rises and acceptance of the same amount of contact increases, but there is always a strong demand for at least as much future contact.

A Recapitulation: We have analyzed the impact of the utilization Volunteer through the teachers' reports of help received, contact with the teacher, problems, and desires for future contact. We have found that help received was related to intensity of Volunteer effort, which corresponded to recency of an area's entry into the television program given the way the project operates, and to frequency of individual contact with the teacher. We have found that help was dramatically related to the minimization of teachers' problems in using television in the schools. Of the 14 different problems measured, 13 showed such a relationship, with frequency of problem varying inversely with help, and eight of these were of striking magnitude involving important (generally very frequent) problems. Help from the Volunteer markedly reduced problems involving physical facilities, school organization, and technological aspects of television use. These data also provided an impressive illustration of the scope of the Volunteer's efforts in school development in connection with the television program. We also found that the desire for more contact with the Volunteer was inversely related to actual contact during the preceding semester, indicating that the teachers without relatively frequent contact wanted more, and we found that even teachers with relatively high actual contact wanted at least as much in the future. The data indicate that individual contact about every two weeks is the minimum figure to approach teacher satisfaction with the degree of contact. In addition, we found that the desire for more contact was inversely related to help, indicating that the less help a teacher received, the more contact he wanted so he could have more help, and we found that the desire for more contact was quite high whatever the degree of help received. These were the major findings. The overall picture is one of very impressive Volunteer effectiveness, and high teacher demand for the services of the Volunteer.

Part VI: A Closer Look at the Data on Volunteer Help

We will now take a closer look at the data on Volunteer help in order to answer some of the questions and doubts that may have been raised. Our purpose will be to determine whether some of the relationships demonstrated may be looked upon as valid or whether they are, in fact, accidents attributable to the particular composition of our sample.

Volunteer Help and Problem Reduction: Our data have indicated that the help provided by the utilization Volunteer can significantly reduce 13 different kinds of problems involving physical facilities, organization, and television technology that teachers encounter in using television (Table 4:8). However, it will also be recalled that we have shown help generally to vary with the degree of intensity of overall Volunteer effort in an area (Table 4:6). Since about 30 per cent of the teachers in our sample of 1,884 were from areas of low intensity of Volunteer effort, where help was minimal, it would be reasonable to entertain the notion that the tendency of teachers receiving less help to have more problems reflects elements of project operation rather than the value of Volunteer assistance. Thus, we might expect the areas of low intensity of Volunteer effort to have more problems at the time of this survey since they entered the project at its inauguration, when procedures and Volunteer role were relatively unspecified and difficulties in the schools of all sorts seemed high. We might also suspect these areas to have regressed after the end of the introductory period of intensive Volunteer effort, and for that reason to have more problems at the time of this survey. In either case, we would not be justified in interpreting our data as showing positive effects from Volunteer help.

We tested this important issue by classifying the problem data by help received from the Volunteer separately for each of the three areas varying in intensity of Volunteer effort. This allows us to examine the effects of Volunteer help while holding overall intensity of effort in an area and entry into the television program constant.

The results are shown in Table 4:11. Let us look at this table. The problems are arranged as before. The per cent of teachers reporting each kind of problem is shown by degree of help received for each of the three areas. Since four degrees of help were measured ("great," "some," "a little," and "no help") there are three such sets of data for each problem, one set for each area.

In regard to the first problem listed, insufficient seats in the TV room, we find that:

In the areas of high intensity of Volunteer effort, the report of this problem was, among teachers receiving "great help," 24 per cent; among teachers receiving "some help," 31 per cent; among teachers receiving "a little help," 50 per cent; and among teachers

Table 4:11: Television Problems by Degree of Help Received from Volunteer Within Three Different Areas Varying by Intensity of Volunteer Effort (and Time of Entry into Television Project)

Per Cent of Teachers Reporting Problems:
(percentages rounded)

Intensity of Volunteer Effort in Area:

Problems: Help:	High G	High S	High L	High N	Intermediate G	Intermediate S	Intermediate L	Intermediate N	Low G	Low S	Low L	Low N
Physical Facilities:												
*Insufficient seats in TV room	24	31	50	50	49	50	52	56	27	26	45	55
*Too many children to watch undisturbed (overcrowding)	22	26	22	48	28	30	39	38	22	20	25	39
*TV room not dark enough	16	24	33	38	27	37	37	56	27	42	43	54
Organizational:												
*Insufficient time for "motivation" and "follow-up"	22	26	31	50	19	25	29	42	20	21	28	34
*TV schedule conflicts with recess	35	49	36	48	23	33	25	41	26	34	36	34
*Interference from noise outside TV room	13	27	17	25	20	27	21	15	9	16	31	25
*Room changing necessitated by TV classes causes confusion	15	26	23	35	27	42	42	50	31	36	43	52
*Discipline problems caused by TV	3	3	6	8	5	7	13	18	2	10	2	3
Technological:												
*Poor sound reception	13	21	22	20	21	26	29	47	22	29	48	41
*TV set too complicated to adjust for clear image and sound	10	19	17	18	18	19	30	32	17	20	36	34
*TV set does not work	5	15	3	8	16	16	22	33	12	17	39	25
*Electricity often fails	31	38	33	15	41	42	46	53	35	44	42	49
Other:												
Conflict with religious activities	10	11	22	10	9	7	5	7	7	4	10	7
*TV set not placed so all children can see	5	7	11	3	5	6	6	13	7	7	22	14
N =	263	172	36	40	267	289	94	98	121	173	83	122

Key: G = Great Help; S = Some Help; L = A Little Help; N = No Help received from Volunteer. High Intensity Areas = Department of Caldas, and Department of Antioquia outside Medellin (ETV introduced during semester of this survey, 2nd semester, 1965); Intermediate = Departments of Boyaca and Tolima, and Medellin (ETV introduced during preceding two semesters, 1st semester of 1965 and 2nd semester of 1964); Low = Department of Cundinamara and Bogota (ETV introduced during inauguration of project, 1st semester of 1964).
*problems (13) shown to be significantly reduced by Volunteer help in overall analysis (see Table 4:8).

receiving "no help," 50 per cent.

In the areas of intermediate intensity of Volunteer effort, the report of this problem was, among teachers receiving "great help," 49 per cent; among teachers receiving "some help," 50 per cent; among teachers receiving "a little help," 52 per cent; and among teachers receiving "no help," 56 per cent.

In the areas of low intensity of Volunteer effort, the report of this problem was, among teachers receiving "great help," 27 per cent; among teachers receiving "some help," 26 per cent; among teachers receiving "a little help," 45 per cent; and among teachers receiving "no help," 55 per cent.

In regard to this particular problem, then, we can see within these three areas that help and problems are inversely related. That is, problems increase as help decreases. This can be seen very clearly simply by comparing the extreme help categories: high intensity, 24 per cent for "great help" vs. 50 per cent for "no help"; intermediate intensity, 49 per cent for "great help" vs. 56 per cent for "no help"; and low intensity, 27 per cent for "great help" vs. 55 per cent for "no help." In the first and third of these instances, the frequency of the problem doubles between "great help" and "no help"; in the middle instance, the increase is less, seven percentage points, but in the same direction. The trend is also consistent with this interpretation, for with each step of decreased help within each area there is usually an increase in the problem (the only exceptions occur in high intensity, where both "a little help" and "no help" have 50 per cent, and in low intensity, where there is a dip of one percentage point from 27 for "great help" to 26 for "some help" before the rise begins, neither of which can be considered a noteworthy deviation).

The data for the other problems can be read and interpreted in the same manner. What we find in doing so is that the pattern for this first problem is typical for the 13 problems shown to be significantly reduced by Volunteer help in the overall analysis. There are really no serious deviations, and none which fit any particular pattern. What Table 4:11 shows is that Volunteer help reduced problems within each of these areas of varying intensity of overall Volunteer effort, giving us great confidence that the relationship between help and problem reduction is a true one.

We have summarized the results of a statistical check on the trend of the problems for the 13 shown to be significantly reduced by Volunteer help in the overall analysis. This summary is shown in Table 4:12. Three comparisons are made: "great help" vs. "no help"; "great help" vs. "some help"; and "great help" vs. "a little help." In each case, we have asked whether the frequency of problems for the degree of help fits the proposition that Volunteer help reduced problems. The data fit when problem frequency is less for "great

Table 4:12: Sign Tests of Trend of Television Problem Data in Table 4:11 for the Thirteen Problems Shown to be Significantly Reduced by Volunteer Help in Overall Analysis

Comparing:	Area:	Greater Help Led to Less Problems	Reversals	
Great Help vs. No Help	H	11	2	
	I	12	1	
	L	13	0	
	Total:	36	3	p. < .001
Great Help vs. Some Help	H	12	0 (1 equal)	
	I	12	0 (1 equal)	
	L	10	2 (1 equal)	
	Total:	34	2	p. < .001
Great Help vs. A Little Help	H	11	1 (1 equal)	
	I	13	0	
	L	12	0 (1 equal)	
	Total:	36	1	p. < .001

Key: H = Areas of high intensity of Volunteer effort
I = Areas of intermediate intensity of Volunteer effort
L = Areas of low intensity of Volunteer effort

(for details see Table 4:11)

help," and do not when the reverse occurs. The results are remarkably consistent. Since there are 13 problems and three areas, each comparison involves the checking of 39 pairs of problem reports. As can be seen, for "great help" vs. "no help," 36 favored the Volunteer and only three did not (p. < .001, sign test). We would consider the point proved on the basis of only this one comparison. However, we also find that for "great help" vs. "some help," 34 favor the Volunteer and there are only two reversals with three equal (p. < .001, sign test), and for "great help" vs. "a little help," 36 favor the Volunteer with only one reversal and two equal (p. < .001, sign test).

This statistical check strongly reinforces the impression gained from an examination of the data in Table 4:11. There is every evidence that Volunteer help does reduce problems, and no evidence that such a relationship appears only as an artifact of the inclusion of areas of low and intermediate intensity of Volunteer help in the total sample.

A Second Test of Volunteer Help and Problem Reduction: It will be recalled that we found that help received from the Volunteer was related to actual contact with the Volunteer (Table 4:7). This was expected since contact would limit to some extent the amount of help a Volunteer could provide. However, since a large proportion of the total sample had relatively infrequent contact with the Volunteer during the semester--about 66 per cent were in the two lowest categories of contact, with about 54 per cent conversing rarely and about 12 per cent conversing less than once every two weeks with the Volunteer--it would be reasonable to suspect that the relationship between Volunteer help and problem reduction shown in the overall analysis (Table 4:8) is an artifact of contact. This would mean that the relationship appeared only because there were a large number of teachers who received no help simply because they had little contact with the Volunteer.

This raises an important issue for the understanding of the Volunteer's activities in this kind of project, for the question posed is whether help and contact should be considered as one. If so, then contact can be considered an absolute measure of Volunteer impact to the extent that it can be expected to occur apart from the circumstances that might imply fewer problems with or without the Volunteer's attention. Unfortunately, it will be recalled that in our summary of other research on the utilization Volunteer we pointed out that we had found during the project's first semester evidence of Volunteer preference in contact for teachers with favorable attitudes toward instructional television and the Volunteer, and it would be reasonable to assume that such teachers would behave so as to have fewer problems than others less favorably oriented. If so, then a relationship between contact and problem reduction cannot be interpreted as clearly showing Volunteer effectiveness.

In a more technical sense, we are concerned with whether help can be considered a useful independent variable for assessing Volunteer impact. If help reduces problems apart from the effects of contact, then we have more confidence in treating it as such.

In an attempt to settle this issue, we examined the effects of help on problems separately for various degrees of contact. In other words, we held contact constant so that we could study the effects of help independent of contact.

The results are shown in Table 4:13. There are five categories of teacher contact with the Volunteer during the semester based on the teacher's own report. In descending order, they are made up of conversations with the Volunteer: a) twice a week, b) once a week, c) once every two weeks, d) less than once every two weeks, and e) rarely. Within each of these categories, the data on help and problems are shown separately. Because the number of cases in the four higher categories of contact was too few to calculate meaningful percentages for "some help," "a little help," and "no help" separately, we have combined these three groups. Thus, the comparison within any category of contact is between "great help" and the combination of "some," "a little," and "no help." With five measures of contact, this leads to five sets of data for each problem with each set consisting of two percentages. The problems are arranged as before, with the percentages representing the teachers' report on them.

Table 4:13: Television Problems by Degree of Help Received from Volunteer for Varying Frequencies of Actual Contact With Volunteer During Semester

Per Cent of Teachers Reporting Problems: (percentages rounded)

Among Teachers Conversing with Volunteer:

Problems: Help:	Twice a week		Once a week		Once every two weeks		Less than once every two weeks		Rarely	
	G	S-N	G	S-N	G	S-N	G	S-N	G	S-N
Physical Facilities:										
*Insufficient seats in TV room	23	52	36	40	34	46	44	46	35	45
*Too many children to watch undisturbed (overcrowding)	27	34	20	39	25	22	23	31	28	32
*TV room not dark enough	23	36	23	29	30	32	12	37	24	43
Organizational:										
*Insufficient time for "motivation" and "follow-up"	29	30	20	18	19	22	8	30	26	31
*TV schedule conflicts with recess	47	36	25	38	24	34	20	34	33	36
*Interference from noise outside TV room	21	30	17	29	17	26	10	18	15	24
*Room changing necessitated by TV classes causes confusion	24	52	16	30	26	41	23	38	29	41
*Discipline problems caused by TV	6	6	3	4	2	7	3	5	4	9
Technological:										
*Poor sound reception	23	30	16	26	17	22	16	26	23	34
*TV set too complicated to adjust for clear image and sound	11	26	9	17	21	23	14	17	20	27
*TV set does not work	9	24	9	14	13	9	7	21	14	22
*Electricity often fails	39	44	34	36	32	50	44	42	38	43
Other:										
Conflict with religious activities	18	8	7	5	6	8	6	5	9	8
*TV set not placed so all children can see	5	10	4	8	6	5	5	6	4	3
N =	66	50	115	77	115	105	84	112	215	645

Key: G = Great Help; S-N = Some Help, A Little Help, and No Help received from Volunteer combined. The latter three categories were combined because the number of cases in each in the four high contact groups (all except "rarely") were too few for meaningful calculation of percentages.

*problems (13) shown to be significantly reduced by Volunteer help in overall analysis (see Table 4:8).

In regard to the first problem, insufficient seats in the TV room, we find that:

Among teachers conversing with the Volunteer twice a week, the report of this problem for teachers receiving "great help" is 23 per cent vs. 52 per cent for those receiving a lesser degree of help.

Among teachers conversing with the Volunteer once a week, the report for teachers receiving "great help" is 36 per cent vs. 40 per cent for those receiving a lesser degree of help.

Among teachers conversing with the Volunteer once every two weeks, the report for teachers receiving "great help" is 34 per cent vs. 46 per cent for those receiving a lesser degree of help.

Among teachers conversing with the Volunteer less than once every two weeks, the report for teachers receiving "great help" is 44 per cent vs. 46 per cent for those receiving a lesser degree of help.

Among teachers conversing with the Volunteer rarely, the report for teachers receiving "great help" is 35 per cent vs. 45 per cent for those receiving a lesser degree of help.

In regard to this particular problem, then, we can see that within each of the five categories of contact "great help" from the Volunteer was associated with a reduced frequency of the problem. Reading across quickly, we see that the percentages for "great help" vs. a lesser degree of help are 23 vs. 52, 36 vs. 40, 34 vs. 46, 44 vs. 46, and 35 vs. 45. In every instance, Volunteer help led to fewer occurrences of the problem.

The data for the other problems can be read and interpreted in the same manner. When we do so, we find that the pattern for this first problem is typical for the 13 problems shown to be significantly reduced by Volunteer help in the overall analysis. The situation is analogous to that in the preceding section for Volunteer help within areas varying in the intensity of overall Volunteer effort. Again, there are no serious deviations, and none which fit any particular pattern. What Table 4:13 shows is that Volunteer help reduced problems apart from contact, giving us further confidence that our treatment of help as a variable is justified and that help did reduce problems.

Again, we have summarized the results of a statistical check on the trend of the 13 problems shown to be significantly reduced by Volunteer help in the overall analysis. This summary appears in Table 4:14. Comparisons are made for each of the five categories of contact for "great help" vs. a lesser degree of help, and a comparison over all categories of contact is shown at the bottom. In each case, we have asked, as before, whether the frequency of problems relative to help fits the proposition that help reduced problems. Again, the data fit when problem frequency is less for "great help," and do not when the reverse occurs. Since there are 13

Table 4:14: Sign Tests of Trend of Television Problem Data in Table 4:13 for the Thirteen Problems Shown to be Significantly Reduced by Volunteer Help in Overall Analysis

	Greater Help Led to Less Problems	Reversals		
Comparison:				
Great Help vs. Some, A Little, and No Help (combined) Among Teachers Conversing with Volunteer:				
Twice a week	11	1	(1 equal)	p. < .01
Once a week	12	1		p. < .01
Once every two weeks	10	3		p. < .10
Less than once every two weeks	12	1		p. < .01
Rarely	12	1		p. < .01
Total:	57	7	(1 equal)	p. < .001

problems, each category of contact involves the checking of 13 pairs of percentages.

As can be seen, for those conversing twice a week with the Volunteer, 11 favored the Volunteer, with only one reversal and one equal (p. < .01, sign test); for those conversing once a week, 12 favored the Volunteer with one equal (p. < .01, sign test); for those conversing once every two weeks, 10 favored the Volunteer with three reversals (p. < .10, sign test); for those conversing less than once every two weeks, 12 favored the Volunteer with one reversal (p. < .01, sign test); and for those conversing rarely, 12 favored the Volunteer with one reversal (p. < .01, sign test). Taking all of these, we find that 57 favored the Volunteer, with six reversals and two equal (p. < .001, sign test).

This statistical check verifies the impression gained from an examination of the data in _Table 4:13_. The relationship between Volunteer help and problem reduction cannot be considered an artifact of contact. We also learn from these data that help can occur even when contact is not very frequent, presumably because of wide variation in the amount of contact required in individual circumstances to reduce a problem. However, we must caution that there is nothing in these data which suggests that infrequent contact may be as effective as very frequent contact since there is no way of assessing the individual seriousness of the problems, which is not likely to be the same in all cases.

More On Volunteer Contact and Helpfulness: We are not quite through with raising questions about our finding that help received by the teacher from the Volunteer is related to actual contact (Table 4:7). This is an important issue in its own right, since the data just presented might be wrongly interpreted as showing that contact over the minimum is largely irrelevant to help. If this were so, then Volunteers could be spread very thinly with no adverse effects on project effectiveness. To forestall misunderstanding, we will anticipate our data and state firmly that it is not so.

However, given our finding that help received varied with intensity of Volunteer effort in an area (Table 4:6) and the presence in the total sample of a large proportion of teachers from areas of low (about 30 per cent) and intermediate (about 40 per cent) intensity of overall effort, it would be reasonable to suspect that the relationship between help and contact might be attributable to the inclusion of these areas in the analysis. This would mean that help was related to the general presence of Volunteers, but not necessarily to actual individual contact. The relationship would occur because teachers in the low and intermediate intensity areas had relatively less individual contact, and would be predominant in the lower contact categories.

That this is not so is shown clearly in Table 4:15. Here we break down help by contact separately for each of the three areas. To simplify the presentation, we show only the percentages reporting "great help."

As can be seen, within each area help is dramatically related to contact. Let us look at the data. Within the area of high intensity of overall Volunteer effort, we find that among teachers conversing with the Volunteer twice a week, 71.2 per cent said they received "great help." Among teachers conversing once a week, it is 63.5 per cent. Among teachers conversing once every two weeks, it is 64.3 per cent. Among teachers conversing less than once every two weeks, it is 45.3 per cent. Among teachers conversing rarely, it is 35.8 per cent. The two extremes of contact show the trend clearly: 71.2 per cent for twice a week vs. only 35.8 per cent for rarely.

Within the area of intermediate intensity of overall Volunteer effort, we find that the pattern is the same. Among teachers conversing twice a week, 52.1 per cent said they received "great help"; once a week, 57.3 per cent; once every two weeks, 43.1 per cent; less than once every two weeks, 47.1 per cent; and rarely, 23.9 per cent. The two extremes of contact again show the trend: 52.1 per cent for twice a week vs. 23.9 per cent for rarely.

Within the area of low intensity of overall Volunteer effort, we find the same thing. Among teachers conversing twice a week, once a week, and once every two weeks (the categories are combined because

Table 4:15: Teacher Report on Helpfulness of Volunteer by Actual Contact With Volunteer During Preceding Semester for Three Different Areas Varying as to Intensity of Volunteer Effort (and Time of Entry into Television Project)

Per Cent Reporting Great Help from Volunteer Among Teachers Conversing With Volunteer:

Intensity of Volunteer Effort in Area	Twice a week	Once a week	Once in two weeks	Less than once in two weeks	Rarely
High	71.2 (52)	63.5 (96)	64.3 (70)	45.3 (53)	35.8 (176)
Intermediate	52.1 (48)	57.3 (75)	43.1 (123)	47.1 (102)	23.9 (330)
Low	------	47.6* (65)	-----	29.3 (41)	20.6 (345)

Key: High = Department of Caldas, and Department of Antioquia outside Medellin (ETV introduced during semester of survey, 2nd semester, 1965).

Intermediate = Departments of Boyaca and Tolima, and Medellin (ETV introduced during 1st semester of 1965 or 2nd semester of 1964).

Low = Department of Cundinamarca and Bogota (ETV introduced during first semester of project, 1st semester, 1964).

*categories combined because of small individual N's (18, 21, and 26 for the three categories, in order).

N on which per cent based shown in parentheses.

of small individual N's), 47.6 per cent said they received "great help"; less than once every two weeks, 29.3 per cent; and rarely, 20.6 per cent. The extremes: 47.6 vs. 20.6 per cent.

These data are impressive evidence of an intimate relationship between contact and help. We must conclude that Volunteer help does vary directly with contact, and we must reject the notion that frequent contact is not important for help while recognizing that in special circumstances help can be given even when contact is not very frequent.

If we pose the question of what frequency of contact is usually necessary to provide "great help," we would turn to the data on the high intensity area for an answer, since these data reflect the ordinary operation of the project when television is being introduced to a teacher population. Table 4:15 suggests that once every two weeks is the best estimate of a minimum figure. At this point, 64.3 per cent of the teachers said they received "great help." As contact decreases, the percentages fall off sharply to 45.3 and 35.8. In the next higher category, once a week, the percentage is 63.5, about the same as for once every two weeks, and a relatively slight rise only occurs for the highest category, twice a week, with 71.2 per cent. The estimate based on help, then, is the same as that derived from teacher satisfaction with contact, which was presented earlier (Table 4:9).

A Recapitulation: We have subjected our findings on the impact of the utilization Volunteer to close scrutiny to determine whether they may be considered as true and valid or artifacts of the composition of the total sample. We found that Volunteer help reduced problems regardless of the intensity of the overall Volunteer effort in an area, strongly increasing our confidence in the relationship between help and reduced problems is a true one. We also found that Volunteer help reduced problems regardless of the degree of actual contact, indicating that help can be considered apart from contact and can be justifiably used as a measure of Volunteer impact. In addition, however, we found that Volunteer help increased with actual contact independently of the intensity of overall Volunteer effort in an area, indicating that contact can be considered an important determinant of help. In short, we found no evidence that any of the relationships found in our overall analysis of the total sample can be attributed to artifacts of sample composition.

The data on contact and help, when analyzed separately for areas varying in intensity of overall Volunteer effort, suggested that contact once every two weeks is the best estimate of the minimum frequency before help declines. This corresponds to the previously derived estimate of the minimum frequency necessary to achieve teacher satisfaction with frequency of contact. Of course, these are average figures and any individual case may differ.

Part VII: Examining a Possible Liability in Volunteer Help

We now turn again to the data on teacher communication about ETV in order to explore an important question. It will be recalled that one of our previous findings was that after special Colombian school supervisors were appointed at the Department level for ETV these Colombian officials were named by almost half the teachers as an appropriate target for comments, complaints, and suggestions about the television program, and stood second only to the utilization Volunteer in this respect (Table 4:4). The appointment of these officials seemed to be a definite step forward in making ETV a Colombian endeavor for, in addition to their actual services, they provided a visible Colombian link between the schools and the new instructional television system.

However, the data did not tell us whether the help given the teachers by the utilization Volunteer was inhibitory or facilitative for the teacher's orientation toward this Colombian official. One might suspect that the greater the help from the Volunteer, the greater the dependence on the Peace Corps and the less the inclination to look to Colombians. If this were so, then help from the Volunteer would have a penalty, whatever its contribution to the immediate effectiveness of the television project.

We will test the relationship between Volunteer help and orientation toward the Colombian ETV supervisor by examining the data on teacher communication from the area of high intensity of overall Volunteer effort in the final 1965 survey (the Departments of Caldas and Antioquia outside Medellin). This portion of the survey provides our best data for this purpose since the teachers were new to television, and therefore not only the focus of extensive help but also extremely susceptible to any side-effects such help might have. Moreover, as the newest areas in the project, the perception of the ETV supervisor's position could be taken as more typical of what could be expected in the future.

We will take the naming of the ETV supervisor as a target for comments, complaints, and suggestions about the program as a measure of orientation. If Volunteer help is inhibitory, or has a penalty in creating dependence at the expense of Colombians, we would expect a significant inverse relationship between help and such communicatory preference. If Volunteer help is facilitative, we would expect a positive relationship. Of course, it would be quite possible for there to be no significant relationship.

The data are shown in Table 4:16. What we find is that Volunteer help was facilitative for orientation toward Colombians. Among teachers receiving "great help," 51.0 per cent name the ETV supervisor, and among teachers receiving less help (the other help categories combined) 40.3 per cent do so ($p. < .02$). The relationship is not

Table 4:16: Volunteer Help and Teacher Orientation Toward ETV Supervisor

	Teacher Received:	
	"Great Help"	Less Help*
Teacher:	(Per Cent of Teachers)	
Names ETV Supervisor as Target for Communication	51.0 (134)	40.3 (100)
Does Not Name ETV Supervisor as Target for Communication	49.0 (129)	59.7 (148)
	100.0	100.0

$X^2 = 5.80$ (p. $< .02$)

*"Some Help," "A Little Help," and "No Help" combined.

dramatic, but definitely significant in a positive direction.

From an operational viewpoint, this suggests that there is little to fear about help from the Volunteer creating inappropriate dependence at the expense of orientation toward Colombians when a local Colombian ETV official exists. It also suggests that the success of these special local ETV officials can be promoted through the Volunteers. Of course, one of the Volunteer's goals is to integrate the teacher into the instructional television program so that the latter is accepted as part of Colombia's educational system and not a transient or foreign innovation. What is interesting about these results is not that they illustrate that he attempts to do so, but that he has some success.

Part VIII: Volunteer Impact from a Different Perspective--Two Special Cases

We will now examine two special cases which provide a somewhat different perspective on Volunteer impact. The first case involves a city where, after the Volunteers had completed the introduction of the television program and had moved to new sites, an abundance of problems called for additional Volunteer attention. In this instance, we will examine the effects of an increase in Volunteer attention on what might be called a "trouble spot." The second case involves a city where the intensity of overall Volunteer effort was reduced when Volunteers were transferred to new sites. In this instance, we will examine the effects of withdrawal of Volunteer help after the successful introduction of ETV.

The First Case: The first case concerns Ibague, a city of about 160,000 and capital of the Department of Tolima. Television was introduced here during the second semester of 1964. This was the second semester of the ETV Project, and Ibague was the first expansion outside the original receiving network core of Bogota and the surrounding Department of Cundinamarca.

By comparison with the inaugural core of Bogota and Cundinamarca, the introductory phase went relatively smoothly. A Departmental ETV supervisor was appointed, providing a local tie and evidence of local support for the new program. The Volunteers found the teachers enthusiastic, and felt they had much greater success in introducing ETV than they had had in Bogota and Cundinamarca. The advance orientation of teachers and officials was more thorough, and school selection--based on capability of facilities and interest--was more rigorous. At the end of 1964, after the introductory semester, the half dozen or so utilization Volunteers were transferred to new sites with the exception of the wife of the Volunteer who was administering the utilization program for the entire Department, who remained because the central Department office, her husband's base, was in Ibague.

We first measured television problems in our survey at the end of the first semester of 1965. For Ibague, this was the first semester of television without intensive Volunteer effort. Ordinarily, we would not have been able to obtain data from an area without Volunteers, but in this one instance the ETV supervisors and the Volunteer utilization leader were able to arrange a mass meeting of all teachers at which the questionnaire was completed.

A comparison of the results for Ibague and other areas, all of which were receiving intensive Volunteer attention at the time, is shown in Table 4:17. A glance reveals that problems tended to be much more frequent in Ibague than in these other areas.

For example, we find that in regard to insufficient seats in the TV room, the 40.2 per cent for the other areas rises to 60.1 per cent for Ibague. In regard to too many children to watch undisturbed

Table 4:17: Television Problems in Ibague During First and Second Semesters of 1965, Including a Comparison with Other Areas During the First Semester

	Per Cent of Teachers Reporting Problems			
	First Semester, 1965		Second Semester, 1965	First vs. Second Semester, Ibague (p.*)
Problems	Other Areas	Ibague	Ibague	
Physical Facilities:				
Insufficient seats in TV room	40.2	60.1	62.7	n.s.
Too many children to watch undisturbed	29.5	59.0	42.2	< .001
TV room not dark enough	27.9	38.2	38.7	n.s.
Organizational:				
Insufficient time for "motivation" and "follow-up"	24.0	34.3	27.9	n.s.
TV schedule conflicts with recess	18.3	9.6	25.0	< .001**
Interference from noise outside TV room	17.7	27.0	24.0	n.s.
Room changing necessitated by TV classes causes confusion	28.0	69.7	48.5	< .001
Discipline problems caused by TV	4.6	14.0	12.3	n.s.
Technological:				
Poor sound reception	31.0	30.5	31.4	n.s.
TV set too complicated to adjust for clear image and sound	21.9	34.3	32.4	n.s.
TV set does not work	15.1	21.3	29.9	< .05***
Electricity often fails	33.7	50.6	57.8	n.s.
Other				
Conflict with religious activities	8.2	9.6	3.9	n.s.
TV set not placed so all children can see	6.2	10.7	5.4	n.s.
N =	694	178	204	

*p. = two-tailed

**not relevant to Ibague comparison (problem increased throughout receiving network during period because of increase in television schedule)

***in this instance, not relevant to Volunteer impact because of chance concentration of large number of faulty sets (overcrowding), we find that the 29.5 per cent for the other areas rises to 59.0 for Ibague. In regard to the TV room not being dark enough, we find that the 27.9 per cent for the other areas rises to 38.2 per cent for Ibague.

This pattern continues throughout the tabulation with only two exceptions (conflict with recess, which happened to be less frequent in Ibague, and poor sound reception, which was about the same for both the other areas and Ibague). Taking the scores for the other areas as a standard, the data clearly indicated that television in Ibague during this period was experiencing an unusual number of difficulties.

These data confirmed the impressions of the Peace Corps ETV Project director gained from a site visit made shortly before the survey. His response was to assign another team of about half a dozen Volunteers to give Ibague more thorough attention during the second semester of 1965.

The results of our measurement of problems for this semester also are shown in Table 4:17. Interpretation is not obvious, so some explanation is necessary.

Two problems increased significantly. In this particular case, however, neither can be taken as reflecting negatively on the effectiveness of the Volunteers. One was conflict with recess which, as explained previously (Table 4:3), increased everywhere during this period because the repeating of telecasts began and this improvement of service increased the opportunity for such conflicts to occur. The other was TV set failure, which increased because of the chance concentration in Ibague of a number of faulty sets. On the basis of our other data on the effects of Volunteer help, we suspect that the frequency of both these problems would have been even greater had Volunteer attention been less in Ibague during this period.

Two problems decreased significantly. We feel these decreases are directly attributable to the effects of increased Volunteer attention. One was too many children in the TV room to watch undisturbed (overcrowding), which fell from 59.0 to 42.2 per cent, a decrease of almost 17 percentage points ($p. < .001$, two-tailed). The other was confusion and lost time from room changing, which fell from 69.7 to 48.5 per cent, a decrease of about 21 percentage points ($p. < .001$, two-tailed). The first concerned physical facilities, the second organizational adaptation to ETV.

For the other problems, there were some gains and some losses, but none significant, so that the variation can be considered simply as the result of sampling error. However, with the two dramatic decreases we feel the data indicate the increase in Volunteer attention had its desired effect in boosting the effectiveness of television in the schools of Ibague. In short, this special case provides further evidence of the positive impact of the utilization

Volunteer, and of the importance of the function such a person performs in establishing instructional television in a developing country.

We should also note that during this period of increased Volunteer attention orientation toward the Colombian ETV supervisor had also increased. For the first semester of 1965, 48.9 per cent of the Ibague teachers named the supervisor as a communicatory target for comments, complaints, and suggestions about ETV. After the semester of increased Volunteer attention, this figure rose to 65.7 per cent, an increase of almost 17 percentage points ($p. < .001$, two-tailed). This adds further support to our previous finding (Table 4:16) that Volunteer help tends to bring the teacher into the new educational system brought about by ETV.

For those who like their packages neat, we should also mention that the data clearly indicate that Volunteer contact with teachers did increase during the second semester of 1965. For the first semester of 1965, 69.6 per cent of the teachers said they conversed with the Volunteer "rarely," the minimum category. For the second semester, this figure fell to 35.2 per cent. There is no question, then, that the intervening period was one of increased Volunteer attention.

The Second Case: The second case concerns Medellin, a city of about 770,000, Colombia's second largest, and the capital of the

Department of Antioquia. Television was introduced here during the first semester of 1965. This was the third semester of the ETV Project's operation.

By this time there were clear-cut improvements in the way television was introduced, and Medellin approaches what might be considered typical of the project afterwards. This is fortunate, for it represents our final opportunity to have data for both a period of intensive Volunteer attention during the introduction of television and for the subsequent period of reduced Volunteer effort. These improvements included increased cooperation and involvement of local officials, a thorough and systematic pre-television orientation of teachers through special "short courses" featuring lectures and demonstrations, and even more rigorous school selection. In addition, of course, the Volunteers by this time had reached their greatest degree of experience in the field and had attained their maximum capability to solve problems.

The first measurement of television problems covers the introductory semester of relatively intensive Volunteer attention. The second measurement covers the following semester, when attention was much reduced. These data are shown in Table 4:18.

What we find is rather exciting from the viewpoint of project operation. There is absolutely no evidence that problems increased after Volunteer attention dropped. In fact, where significant changes

Table 4:18: Television Problems During Introductory Semester and Following Semester in Medellin

	Per Cent of Teachers Reporting Problems	
	During Introductory Semester (1st semester of 1965)	During Following Semester (2nd semester of 1965)
Problems:		
Physical Facilities:		
Insufficient seats in TV room	32.2	23.8*
Too many children to watch undisturbed (overcrowding)	24.9	16.8*
TV room not dark enough	20.3	21.3
Organizational:		
Insufficient time for "motivation" and "follow-up"	28.7	29.2
TV schedule conflicts with recess	12.9	22.8**
Interference from noise outside TV room	14.1	13.4
Room changing necessitated by TV classes causes confusion	21.3	21.3
Discipline problems caused by TV	4.5	2.5
Technological:		
Poor sound reception	25.1	7.9**
TV set too complicated to adjust for clear image and sound	23.0	12.9***
TV set does not work	15.1	12.9
Electricity often fails	21.5	16.8
Other:		
Conflict with religious activities	7.4	5.4
TV set not placed so all children can see	4.5	2.0
N =	418	202

*p. < .05, two-tailed.

**p. < .001, two-tailed. All the significant shifts involve decreases except for conflict with recess, which has no bearing on withdrawal of Volunteer attention since this problem increased everywhere as the result of increasing the television broadcast day by repeating telecasts, thereby increasing the opportunity for such conflicts.

occurred, they are in the opposite direction--with problems decreasing.

Of course, we find the same increase in regard to conflict with recess, and for the same reason--increase of the television schedule by repeating broadcasts--as before. For the other problems, we find the frequency either the same or significantly less at the second measurement.

Those for which there was a significant decrease include insufficient seats in the TV room, which dropped from 32.3 to 23.8 per cent ($p. < .05$); too many children to watch undisturbed (overcrowding), which dropped from 24.9 to 16.8 per cent ($p. < .05$); poor sound reception, which dropped from 25.1 to 7.9 per cent ($p. < .001$); and set adjustment, which dropped from 23.0 to 12.9 per cent ($p. < .001$). We would judge these decreases to be the products of the Volunteers' excellent introductory program conducted during Medellin's first semester of television (it will be recalled that the problem inventory measured any occurrence of a problem during a semester, so that a decreasing trend over the two semesters would be reflected in the data in just this way).

However, we are not so much interested in this case in whether the problems significantly decreased since there was no intervening event (such as increased Volunteer attention in the case of Ibague) to which decreases might be attributed. What does command our interest is that the problems did not increase significantly after intensive Volunteer effort ceased. What the case of Medellin suggests is that the withdrawal of Volunteer attention on a broad basis after a well-planned introductory semester need not be accompanied by deterioration of the effectiveness with which television functions in the schools.

Again, for those who like their packages neat, we should add that our data clearly indicate that Volunteer contact with teachers decreased during this period. Between the two semesters, the teachers conversing with the Volunteer once a week or more (the top two contact categories combined) dropped from about 32 to about 15 per cent, and those conversing rarely (the minimum category) increased from about 33 per cent to about 49 per cent.

A Recapitulation: We have examined two distinct cases from a historical perspective using our survey data to measure trends. In the case of Ibague, we found that important problems interfering with the effectiveness of television in the schools were reduced by an increase of Volunteer effort (we should probably add that there is no evidence, one way or the other, as to whether the first measurement of these problems represented an increase over the introductory phase). In the case of Medellin, we found that the ending of intensive Volunteer attention did not result in an increase of problems. The Medellin case is particularly noteworthy, for it indicates that well-planned introduction of ETV by Volunteers is not necessarily followed by deterioration after their departure. In this respect, it should be noted that the treatment given Medellin in the introduction of ETV represented the kind of program that typified the ETV Project in later expansions.

Part IX: The Teacher Rates the Volunteer

We asked the teachers to rate the utilization Volunteers on two counts -- the quality of their advice, and the adequacy of their preparation. We will examine their replies on each in turn.

Quality of Advice: We will confine ourselves to data from the final survey of 1965 since it involves the largest and most recent sample, and the interpretation of the same kind of data from the other surveys would be the same. We asked the teachers to rate the Volunteer's advice as to whether it was "good and practical," "impractical because the teacher lacked the equipment and resources to apply it," "unusual because it was not clear," or, in the teacher's opinion, simply "not good."

By breaking down the replies by help received, we can gain some idea of why the Volunteer was perceived to have failed to provide help. The data appear in Table 4:19. Overall, regardless of degree of help received, we find that 47.8 per cent felt the Volunteer's advice was "good and practical," 31.3 per cent felt it was "impractical because equipment and resources were lacking," 13.5 per cent felt it was "unclear," 5.1 per cent felt it was both "impractical" and "unclear," and 2.2 per cent felt it was simply "no good." When we consider degree of help, however, we find some marked differences.

Among teachers receiving "great help," 67.3 per cent felt the Volunteer's advice was "good and practical," while among teachers

Table 4:19: Teacher Rating of Quality of Volunteer Advice

Rating: Volunteer's advice is:	Per Cent of Teachers Among Those Receiving: "Great Help"	Less Help	All
good and practical	67.3	33.1	47.8
impractical because equipment and resources lacking	24.9	36.2	31.3
unclear	4.0	20.7	13.5
impractical and unclear	3.3	6.5	5.1
no good	.5	3.5	2.2
N =	621	821	

receiving less help ("some help," "a little help," and "no help" combined) only 33.1 per cent made such a favorable evaluation. The difference occurs because of sharp rises in the rating of advice as "impractical" (24.9 per cent among "great help" teachers vs. 36.2 per cent among less help teachers) and "unclear" (4.0 per cent among "great help" teachers vs. 20.7 per cent among less help teachers). It should be noted that the increase is principally in the two relatively specific categories, and not in the blanket "no good" category. In short, the teachers found that Volunteers could not help them either when their advice did not seem to take fully into account the limited resources available to the teacher or was vague and not specific.

Volunteer Preparation: For the same reasons as with quality of advice, we will confine ourselves to data from the final 1965 survey. We asked the teachers to indicate on a check-list whether they felt the Volunteer's preparation could have been better in Spanish, teaching methods, and knowledge about teacher's problems generally.

Again, we can break down the replies by degree of help received. The data appear in Table 4:20. Overall, regardless of degree of help received, 51.2 per cent complained that the Volunteer should know more about Colombian teachers' problems generally, 44.5 per cent complained that the Volunteer should speak better Spanish, and 20.6 per cent complained that the Volunteer did not know enough about

Table 4:20: Teacher Rating of Inadequacies in Volunteer Preparation

	Per Cent of Teachers Complaining Among Teachers Receiving:		
	"Great Help"	Less Help	All
Complaint:			
Volunteer should know more about teacher's problems generally	44.3	55.2	51.2
Volunteer should speak better Spanish	35.6	49.7	44.5
Volunteer should know more about teaching methods	9.0	27.4	20.6
N =	655	1,117	1,772

teaching. Differences appear when we consider degree of help received.

Among teachers receiving "great help," 44.3 per cent complained that the Volunteer should know more about teachers' problems generally, compared with 55.2 per cent for teachers receiving less help. In regard to Spanish, it is 35.6 vs. 49.7 per cent, and in regard to knowledge about teaching methods, it is 9.0 vs. 27.4 per cent. We can only conclude from these data that all of these factors adversely affected the Volunteer's capability to help. We would also note, on the basis of the overall replies, that what seemed to disturb the teachers most was the feeling that the Volunteer did not understand the teacher's problems and language inadequacy.

Part X: The Pattern of Volunteer Contact with the Teacher

Since we have found that Volunteer help for the teacher is a function of contact (Tables 4:7 and 4:15), although it is possible for the Volunteer to be effective even when contact is relatively slight (Table 4:13), the actual frequency of contact occurring takes on considerable importance. How frequently did the Volunteers interact with individual teachers? How frequently did the Volunteers visit schools? We can answer these questions with good estimates, for we asked the teachers themselves about contact with the Volunteers in our survey.

We queried the teachers both about conversations with the Volunteer and about Volunteer visits to the teacher's school. In regard to the first, we asked, "On the average, how frequently during the past semester have you talked with the Volunteer about making effective use of the instructional television?" In regard to the second, we asked, "On the average, how frequently during the past semester has the Volunteer visited your school in connection with instructional television?" For both questions, the possible replies were "twice a week," "once a week," "once every two weeks," "less than once every two weeks," and "rarely."

Typical Introductory Contact: The typical frequency of contact during the introduction of ETV in an area can be seen in Table 4:21. For each of three semesters--the first semester of 1964, when the

Table 4:21: Volunteer Contact with Teachers During Intensive Attention

Per Cent of Teachers Reporting:
(percentages rounded)

	Conversing with Volunteer						Visits to School by Volunteer					
	1	2	3	4	5		1	2	3	4	5	
First Semester, 1964.	23	23	21	9	24	(216)	29	25	25	9	12	(217)
First Semester, 1965	10	24	23	11	32	(605)	16	29	25	12	19	(630)
Second Semester, 1965	12	21	15	12	40	(459)	26	18	19	17	20	(484)

Key: 1 = Twice a week
2 = Once a week
3 = Once every two weeks
4 = Less than once every two weeks
5 = Rarely

Data from: First Semester, 1964: Bogota and Department of Cundinamarca; First Semester, 1965: Medellin, Department of Boyaca, and Department of Tolima outside Ibague; Second Semester, 1965: Department of Caldas, and Department of Antioquia outside Medellin.

N = the number of teachers on which the per cents are based project was inaugurated, the first semester of 1965, and the second semester of 1965--the teachers' reports on conversations and visits are shown for those areas new to television at the time (data from the second semester of 1964 are omitted because the number of respondents from the only new area, Ibague, was very small--fewer than 70). For each semester, then, the data represent contact during intensive Volunteer attention. As a result, the figures are estimates of the maximum contact that occurred.

To review the figures:

In regard to individual interaction with teachers, we find that during the ETV Project's inaugural semester (the first semester of 1964) 23 per cent of the teachers reported conversing with the Volunteer twice a week, 23 per cent once a week, 21 per cent once every two weeks, nine per cent less than once every two weeks, and 24 per cent rarely. During the first semester of 1965, the figures are: 10 per cent, twice a week; 24 per cent, once a week; 23 per cent, once every two weeks; 11 per cent, less than once every two weeks; and 32 per cent, rarely. During the second semester of 1965, the figures are: 12 per cent, twice a week; 21 per cent, once a week; 15 per cent, once every two weeks; 12 per cent, less than once every two weeks; and 40 per cent, rarely.

In regard to school visits, we find that during the project's inaugural semester 29 per cent of the teachers reported that the

Volunteer visited their school twice a week, 25 per cent once a week, 25 per cent once every two weeks, nine per cent less than once every two weeks, and 12 per cent rarely. During the first semester of 1965, the figures are: 16 per cent, twice a week; 29 per cent, once a week; 25 per cent, once every two weeks; 12 per cent, less than once every two weeks; and 19 per cent, rarely. During the second semester of 1965, the figures are: 26 per cent, twice a week; 18 per cent, once a week; 19 per cent, once every two weeks; 17 per cent, less than once every two weeks; and 20 per cent, rarely.

It is obvious that there was a decline in contact for each successive area of high intensity of overall Volunteer effort. If we take "once every two weeks" or more as a criterion (twice a week, once a week, and once every two weeks combined), we find that for conversations the figure drops from 67 per cent for the inaugural semester to 57 per cent for the first semester of 1965, and to 48 per cent for the second semester of 1965. For school visits, the figure drops from 79 to 70 and finally to 63 per cent for the same periods. This trend can also be seen by glancing at the figures for those reporting conversations and visits as occurring "rarely," the minimum measurement: for conversations, these rise from 24 to 32 to 40 per cent; for visits, from 12 to 19 and 20 per cent.

What this reflects is not reduced effort by the utilization Volunteers at work, but a decrease in the number available to serve in new areas. By the end of the inaugural semester in 1964, there were about 360 television schools with about 1,800 teachers and they were being served by the entire utilization contingent assigned at the time--about 45 Volunteers. During the first and second semesters of 1965, there were in each case slightly more than 200 schools with more than 1,500 teachers in the new television areas, with only about a dozen Volunteers in each semester to serve them. Although the total number of Volunteers in utilization remained about the same, this came about because with each expansion more Volunteers were required in administrative positions to coordinate activities within areas (for example, there were nine in such positions during the second semester of 1965) while still others were needed to continue service to both old and new television schools in the older television areas.

We have two important points to make about these figures. The first is that they reflect rather definite gains in the efficiency with which the utilization program was operating, for while the Volunteer team was cut by almost three-quarters for a new area between the inaugural semester and the second semester of 1965 (from about 45 to about 12 Volunteers), the frequency of contact with teachers dropped far less. The second is that they show clearly how the power to expand service of a project of this kind becomes increasingly limited as the project matures unless the number of Volunteers is increased. For the planner, the implication is that more, not less, utilization

Volunteers are needed with growth in an instructional television project of this scale, although increased efficiency (individual productivity) can also be expected.

It is also obvious that there was always a sizable proportion of teachers who were largely left out of the utilization program. During the inaugural semester, 24 per cent report conversations as occurring "rarely." In the two semesters of 1965, the figure rises to 32 and 40 per cent. During the inaugural semester, 12 per cent report school visits as occurring "rarely." In the two semesters of 1965, the figure rises to 19 and 20 per cent.

Although we cannot state precisely just what frequency of contact "rarely" represents, we can infer an upper limit from the scale of which it was a part that makes it clear that contact for these teachers was indeed minimal, if any at all occurred. It will be recalled that categories above "rarely" were, in ascending order, "less than once every two weeks," "once every two weeks," "once a week," and "twice a week." This means that the teacher checking "rarely" is indicating that contact has been less than the once every three or four weeks implied by the "less than once every week" cate-category. The upper limit of contact represented by "rarely" is certainly once a month. Of course, it would also embrace contact of less frequency, and no contact at all. Thus, it is clear that these fairly large proportions for "rarely"--in the areas receiving intensive attention during the introduction of television during the final semester of 1965, 40 per cent for conversations and 20 per cent for visits--represent a noteworthy pool of teachers omitted from the Peace Corps program.

We also find that there is a considerable discrepancy in each of the three semesters between the data for conversations and visits, with conversations being less frequent. This can be seen readily by comparing the figures for "rarely" within each semester for conversations vs. visits: 24 per cent vs. 12 per cent; 32 per cent vs. 19 per cent; and 40 per cent vs. 20 per cent. This is certainly understandable, for a Volunteer might not have equal contact with all teachers in a school on each of his visits. However, it does indicate that when the school is used as a unit for organizing utilization it does not guarantee equal contact with all teachers.

Given the limited number of Volunteers available, we cannot aruge that such equal contact would be either necessarily possible or desirable. Yet, the fact that it does not occur does impose a responsibility for guarding against any possible detrimental effects. For the Volunteer, this means that he must use his precious time in a school as judiciously as possible, for attention to one teacher is paid for by ignoring another. For those who direct the utilization program, Volunteer leaders and Peace Corps staff, it means that careful attention must be given to procedures that maximize such review by individual utilization Volunteers. It also suggests that there should be concern for developing more efficient ways of interacting and helping greater numbers of teachers with the same amount of time--such as by increasing attention in group settings.

The contact problem takes on added import when we consider that "school development," or the solution of the kinds of television problems discussed in this report, is only part of the utilization Volunteer's job. His other job is to improve teaching methods. We explicate the utilization Volunteer's role elsewhere. However, the comments of the Peace Corps director of the ETV Project in his report to the Volunteers at the end of 1965 will suffice to show its dual nature:

> ...utilization is the backbone of this project because the best program in the world cannot succeed unless it succeeds at the point of reception where the consumer is. We have talked about utilization on two levels, the first being the general organization and the solving of logistical problems--placing of television sets in schools that meet Peace Corps requirements, orientation for directors, supervisors, and teachers, distribution and explanation of the schedules and Guides, proper tuning of TV sets, and scheduling of "motivation" periods and "follow-up" periods...
>
> Once these problems are solved, your work begins on a much more profound and reaching level. It is entirely possible for a school to organize itself around the television received, meet all schedules, and give the outward appearance of smooth running operations, with one small exception--no teaching is going on, or if there is teaching, it is using outmoded and archaic methods based on a system of rote memorization with the total absence of pupil participation...[12]

Now, unequal contact with its implied lack of communication with certain teachers may be adequate for the solving of the problems of physical facilities, organization, and technology that we discussed. However, it seems unlikely that there can be any changes in teaching practices unless the Volunteer communicates the new practices to the teachers. When we consider that much of the Volunteer's time is spent on the operational problems associated with television use in the schools, we have a further reason for urging close attention to making the most of what opportunity remains to affect teaching.

The discrepancy between conversations and visits means that some teachers in frequently visited schools are likely to be ignored. We can obtain an estimate of the seriousness of this for any specified frequency of contact by examining the proportion who conversed less often than their school was visited. Taking contact at once every two weeks or more as an arbitrary criterion, we find that in the two more typical semesters, the first and second semesters of 1965, 19 and 24 per cent of the teachers, respectively, whose schools received this measure of contact individually had less contact with the Volunteer. (In the first semester of 1965, 70 per cent reported visits at this frequency, and only 57 per cent reported conversations at the same frequency, so that the difference of 13 percentage points represents 19 per cent of the total of 70 per cent. In the second semester, 63 per cent reported visits at this frequency, 48 per cent reported conversations, with the difference of 15 percentage points representing 24 per cent of the 63 per cent total.) Thus, we find that in addition to what the figures tell us about exclusion of some teachers overall, the figures also tell us that even within relatively high contact schools some teachers were largely ignored.

What we learn from all of this is that the ratio of one Volunteer to about 17 schools during the introduction of television, which was roughly the ratio during 1965, is not adequate. If we make the arbitrary assumptions that school visits are adequate for solving the operational problems, we find that 19 and 20 per cent in the two semesters of 1965 reported visits as "rarely." If we acknowledge the fact that some direct contact is necessary to change teaching practices, the situation is even worse--32 and 40 per cent in the two semesters of 1965 reporting conversations as "rarely." The implication is that the utilization program requires careful management of Volunteer time, the principal controllable output, which can only be achieved through more conscious distribution of attention and use of group techniques to reach more teachers with a given amount of attention.

Overall Contact: So far, we have been concerned with contact when it is most intense, during the introduction of televised instruction in an area. However, since these figures represent the maximum amount of attention given an area at any time they should not be mistaken for the amount of contact occurring generally throughout the project at the same time. In order to make our description of Peace Corps service to teachers using television complete, we will also present the data for the entire project during the final semester of 1965.

At this time, there were about 1,250 schools with television in Colombia, with about 8,500 teachers. Slightly more than 200 of these schools, with somewhat more than 2,000 teachers, were in the areas where television was being introduced during this semester. Altogether, there were 47 utilization Volunteers at work in the country during this period. Nine were serving in administrative posts as ETV Coordinators in various parts of the country, directing the Volunteer utilization program and collaborating with the Colombian Departmental television supervisors and other local officials to insure the effective functioning of the receiving network of schools, leaving 38 Volunteers for full-time work in the schools themselves. Of these, about 12 were in the new television areas, leaving 26 for the remaining schools, which numbered about 1,000. We can see, then, that the amount of contact occurring after the introductory period in the other areas will be relatively slight.

The actual data appear in Table 4:22. To give a clearer picture, we have classified the data by intensity of overall Volunteer attention (which corresponds to the recency of the introduction of television). This is the same breakdown we have used previously in this report. Of course, the data for the area of high intensity of overall Volunteer effort during this second semester of 1965 is the same as that presented before on contact during the introduction of television in this period (that is, the top line of Table 4:22 matches the bottom line of Table 4:21).

We find, of course, that the amount of contact in the areas being introduced to television--although even there, it will be remembered, a noteworthy proportion of teachers and schools had slight contact--is far from equalled in the other areas. This can be easily seen simply by noting the progressive increases in the reports of "rare" contact: as we shift from the high to the intermediate and finally to the low intensity areas, we find the figures for conversations rising from 40 to 49 and finally to 76 per cent, and for visits from 20 to 40 and finally to 72 per cent.

If we take contact at "once every two weeks" or more as a criterion, as we have done previously, we find the figures declining as we shift from high to intermediate to low (it should be remembered that these can also be read in terms of recency of introduction of television). For conversations, the figures fall from 48 to 36 to 15 per cent. For school visits, the figures fall from 63 to 46 to 18 per cent.

What these figures tell us is that a country-wide team of 47

Table 4:22: Volunteer Contact with Teachers throughout ETV Project During Final Semester of 1965

Per Cent of Teachers Reporting:
(percentages rounded)

Intensity of Volunteer Attention in Area:	Conversing with Volunteer						Visits to School by Volunteer					
	1	2	3	4	5		1	2	3	4	5	
High	12	21	15	12	40	(459)	26	18	19	17	20	(484)
Intermediate	7	11	18	15	49	(698)	13	12	21	14	40	(726)
Low	4	5	6	9	76	(462)	6	5	7	10	72	(478)
All Areas	8	12	14	12	54	(1,628)	15	13	16	13	43	(1,718)

Key:
1 = Twice a week
2 = Once a week
3 = Once every two weeks
4 = Less than once every two weeks
5 = Rarely

Areas: High = Department of Caldas and Department of Antioquia outside of Medellin (ETV introduced during semester of this survey, 2nd semester, 1965); Intermediate = Departments of Boyaca and Tolima, and Medellin (ETV introduced during preceding two semesters, 1st semester of 1965 and 2nd semester of 1964); Low = Department of Cundinamarca and Bogota (ETV introduced during inauguration of project, 1st semester of 1964).

N = the number of teachers on which the per cents are based

The N for all areas exceeds the total for the three intensity classifications because some respondents could not be classified geographically utilization Volunteers can give only slight attention to teachers after the introductory period is over. This takes on particular significance when we recall that the frequency of operational problems remained undesirably high throughout the country even after the introductory semester (Table 4:11) and that the attention demanded by these problems left very little time for attention to teaching itself. Coupled with our finding that Volunteer help can minimize operational problems, we think that the contact data suggest a reconsideration of the adequacy of the Volunteer manpower assigned to utilization in the Colombia ETV Project.

A Recapitulation: We have reviewed data on the actual amount of contact that occurred between Volunteers and teachers in the ETV Project. Contact takes on great importance because we have found that the Volunteer can give help which significantly reduces problems the teacher encounters in using television, and that help increases with contact.

In examining contact at its maximum, during the introduction of televised instruction in an area, we found that a sizable proportion of teachers had relatively little contact with the Volunteer. In the area being introduced to television during the second semester of 1965, for example, one out of five teachers (20 per cent) reported that the Volunteer visited their school only "rarely"--which at the maximum meant no more than once a month. Because Volunteers may not interact with all teachers on every visit, the report of "rare" conversations was even higher--four out of 10 (40 per cent). This discrepancy between reports for school visits and conversations also illustrated that there is considerable selectivity in the attention given by the Volunteer, an unavoidable consequence of work load for which each Volunteer must be responsible.

In examining contact for all areas, including those introduced to television during preceding semesters, we found that contact was dramatically less after the introductory period. For example, the report of "rare" school visits rose from 20 per cent for the area currently being introduced to television to 40 per cent for the area introduced during the preceding two semesters and to 72 per cent for the area introduced when the project was inaugurated (the third semester prior to the final semester of 1965).

These data have a number of implications:

1) As a project such as the ETV Project in Colombia grows, its power to give teachers attention from Volunteers decreases unless the number of Volunteers is increased. This occurs because each new area absorbs additional Volunteers in administrative and coordinating positions, and because in each area some Volunteers remain to work full-time in schools to maintain and further expand the receiving network.

2) Systematic attention must be given to the distribution of

attention, and the development of techniques to reach more teachers with the same amount of time--such as group presentations--is desirable. In this respect, a distinction should be made between the solving of operational problems--problems of physical facilities, organization, and technology--brought by television and the improvement of teaching. Organizational problems may often be solvable through contact with the principal and a few teachers in a school. However, teaching can only be affected through actual communication to the individual teacher, whether on an individual or group basis. This fact, together with the expenditure of much Volunteer time on operational problems, suggests that the amount of contact occurring between teachers and Volunteers in the ETV Project was unlikely to be sufficient to much affect teaching in any profound way.

3) The total of 47 utilization Volunteers in Colombia at the end of 1965 was not sufficient to provide the continuing attention necessary in areas already introduced to television that the undesirably high frequency of operational problems in the schools would seem to call for. The ratio of about one Volunteer to 17 schools in areas being introduced to television after the inaugural semester of 1964 also would seem to be inadequate if more than the reduction of operational problems is intended.

Part XI: Summary and Discussion

In this report, we have drawn on our surveys of several thousand Colombian teachers who, with television sets installed in their schools, were regularly presenting the televised instruction of the Peace Corps ETV Project to their pupils, to focus on two important issues:

---The problems brought to the Colombian public elementary school by the use of the modern electronic medium of television for daily instruction.

---The impact of the large number of Volunteers assigned to work with the teachers in the schools to promote the effective use of the television in solving these problems.

In addition, we have also presented a variety of other data from our surveys bearing on teacher communicatory behavior related to the television project, the teachers' desires for contact with the Volunteer, the teachers' ratings of the Volunteer's performance, and the amount of contact that occurred between teachers and Volunteers. Altogether, our survey data have enabled us to give an unusually detailed, informative, and useful account of the operation of instructional television in the schools of Colombia.

The surveys were conducted at the end of each of the four semesters spanned by our two years of field study in Colombia in 1964 and 1965. For the most part, we have used data from our final survey, at the end of the second semester of 1965. This survey involved 1,884 teachers spread over the entire receiving network of the ETV Project. We have also drawn considerably from our survey at the end of the first semester of 1965, which involved 874 teachers, and to a lesser extent from our survey at the end of the project's inaugural semester, the first semester of 1964, which involved 252 teachers. These surveys have provided us with a very rich body of data with which to work, since they have provided us with information on teachers at various stages in the project's development, and in some cases--such as in the surveys of 1965--on teachers with varying degrees of length of participation in the project.

We have given a great deal of attention to the utilization Volunteer in the ETV Project--so-called because he was assigned to work with teachers in television schools on the effective use of the new instructional medium--for two reasons. One is that he represented the Peace Corps' major manpower commitment in the ETV Project. Between the inauguration of the project at the beginning of 1964 and the end of 1966, three years later, between 77 and 88 Volunteers at any one time were working full-time in the ETV Project. Of these, about two-thirds at any time were utilization Volunteers, with the remainder serving in television production or as technicians installing and maintaining TV sets in schools or servicing studio equipment. The other is that we were eager to learn what impact and importance for an instructional television project in a developing country, where the mass medium of television holds tempting promise as a solution for educational needs, close and individual attention to the daily use actually made of the television in the classrooms would have.

Our interest was whetted by our finding, as the result of a large field experiment testing the achievement of pupils during the project's inaugural semester, that the teaching advice imparted by the utilization Volunteer seemed to have little impact, and by our finding--contrary to Peace Corps expectations--that much of the effort of these Volunteers had to be expended on the resolution of various problems brought to the schools by television. The demands of these problems partly explained the lack of impact on pupil achievement, since concentration on them left little time for attention to teaching practices. Another reason was that few of the utilization Volunteers had any pre-Peace Corps experience or training in education, and as a result lacked both the knowledge and confidence to change teaching methods. This led to an expansion of the role of teaching consultant originally conceived for the utilization Volunteer by the Peace Corps to include "school development" in the interests of ETV. We also found in our research during the project's inaugural semester that attention from the utilization Volunteer helped to maintain and build favorable attitudes toward the new instructional program, an achievement important both for building a psychological foundation for the later changing of teaching practices and for gaining cooperation in solving non-teaching problems brought by television.

In this report, we focus on these non-teaching problems, which we suspect would be common to the introduction of televised instruction in any developing country, and the effectiveness of the Volunteer in dealing with them. We have asked: What were these problems? Was the Volunteer---whose role might be filled by other kinds of personnel in some other instructional television project--able to make any difference in solving them?

In order to measure the problems precisely, we constructed a 14-item television problem scale covering all the kinds of problems Volunteers, teachers, and other Colombian school officials reported encountering in connection with television. The primary basis for this scale was over 300 "critical incidents" collected from the utilization Volunteers, each representing an actual problem with which the Volunteer had had to deal in his work in the schools. This scale was included in both of our 1965 surveys.

By factor analysis, we found that the problems could be roughly classified as involving physical facilities, school organization around television use, and technological aspects of television use. Problems of physical facilities included: a) insufficient seating in the television room, b) overcrowding in the television room, and c) lack of darkness in the television room. Problems of school organization included: a) lack of time for "motivation" and "follow-up" teaching (the 15 minutes before and again after each quarter-hour televised lesson that the school teacher was expected to provide as partnership teaching to the television); b) conflict between the television and scheduled recess; c) interference with television learning from outside noise; d) confusion and loss of time in the school as the result of the room changing necessitated by television (in most cases there was only one TV set per school); and, e) problems of pupil discipline attributed to television. Problems of technology included: a) inadequate sound reception; b) difficulties in TV set adjustment; c) TV set failure; and d) electricity failures. The two remaining problems in our 14-item scale could not be classified in these categories. They included conflict between the television and scheduled religious activities and TV set placement. Although we were readily able to place most of the problems as involving physical facilities, organization, or technology, the factor analysis also indicated (through generally low loadings and low totalities of item variance encompassed by the extracted factors) that we should consider each problem as independent.

The survey measurements showed the occurrence of many of the problems to be very high. With one exception, the results for both 1965 surveys were about the same. We found that the 874 teachers in the first survey and the 1,884 teachers in the second survey reported being disturbed by the problems to this extent (percentages are for the first and second semester surveys of 1965, in order):

In regard to physical facilities: About four out of 10 said there were insufficient seats in the television room (44.3 and 39.1 per cent). About one out of three said there were too many children for undisturbed viewing, or overcrowding (35.5 and 27.2 per cent). About one out of three said the television room was not dark enough (30.0 and 33.1 per cent).

In regard to school organization: About one out of four said there was insufficient time for "motivation" and "follow-up" (26.1 and 25.2 per cent). About one out of six in the first survey and about one out of three in the second survey said that the television conflicts with recess (16.5 and 32.8 per cent); this is the exception to consistency between the surveys, and it occurred because the repeating of telecasts during the second semester increased the opportunity for conflict. About one out of five said there was interference from outside noise (19.6 and 19.7 per cent). About one out of three said there was loss of time and confusion because of room changing (36.4 and 32.8 per cent). Only about one out of 20 said there were discipline problems caused by television (6.5 and 5.4 per cent); unlike the others, this was clearly a relatively unimportant problem generally.

In regard to television technology: About one out of four said sound reception was inadequate (30.8 and 25.5 per cent). About one out of five said the adjusting of the TV set was a problem (24.4 and 20.1 per cent). About one out of six complained of TV set failure (16.4 per cent in both surveys). About one out of three said that the electricity had failed (37.1 and 38.9 per cent).

In regard to the two other problems: Fewer than one out of 10 complained that the television conflicted with religious activities (8.1 and 7.7 per cent). Fewer than one out of 10 also said that the TV set was not properly placed in the television room (7.1 and 7.6 per cent). Both of these, then, were relatively unimportant problems.

For anyone contemplating the up-grading of education in a developing country simply to televising instruction and installing TV sets in his country's schools, these are disturbing results. If we dismiss the three low frequency problems (discipline, conflict with religious activities, and TV set placement), and even if we consider conflict with recess more as a complaint than a true problem, we are still left with 10 problems each of which disturbed between one out of six and four out of 10 teachers seriously enough for them to make a report on our questionnaires. Problems were very frequent in all classifications--physical facilities, school organization, and television technology.

These findings suggest that the best televised instruction in the world, as measured by its instructional and esthetic qualities, would falter at the point of reception in a developing country unless attention is given to the problems television brings to the school. What is most disturbing about these findings is that such problems could easily go undetected without some system of feedback from the schools and a willingness to think of televised instruction as involving more than mere broadcasting.

These findings amply illustrate the task facing the Volunteer in "school development" for instructional television. Taken by themselves, they also give ample evidence of the importance of providing for close attention to what happens in the school in an instructional television project. We will now turn to our findings on the impact of the utilization Volunteer in solving these problems. We found that he had a considerable positive effect, which means that the count of these problems we have given is less than it would have been without such a person. As a catalogue of the difficulties which are likely to beset television in the schools of a developing country, then, our figures actually represent an underestimate.

To help us assess the impact of the Volunteer, we asked the teacher to tell us how much help the Volunteer had given him in using television in his classroom teaching. The possible replies were "great help," "some help," "a little help," and "no help." The measurements on this variable--help given by the Volunteer--provided us with the key for investigating the effectiveness of the utilization Volunteer.

In our final survey of 1965, we found that in the area undergoing its introduction to television, where intensity of Volunteer attention was at a peak, 51.7 per cent of the teachers replied "great help," 33.3 per cent replied "some help," 7.0 per cent replied "a little help," and 7.6 per cent replied "no help." By themselves, these results at best told us that a bare majority of the teachers felt they received "great help" from the Volunteer during the introduction of television, but not much else. Without some sort of external criterion, the evaluation of such findings as favorable or unfavorable is simply a matter of opinion. However, by looking at the data for areas introduced to television in the two preceding semesters, where intensity of Volunteer effort was less, and at data for the area introduced during the project's inaugural semester, which by the end of 1965 was receiving a relatively minimal amount of attention, we found that help was directly related to intensity of Volunteer effort in an area. Thus, the replies for "great help" were 51.7 per cent for the high intensity of attention area, above, but only 35.8 per cent for the area of intermediate intensity, and a low 24.2 per cent for the area of minimal intensity. This indicated that the teachers' reports on help received from the Volunteer actually represented differences in Volunteer behavior, which differed among these three areas simply in regard to the amount of attention received by teachers in each.

When we broke down the replies for the total sample on help by actual individual contact with the Volunteer, we found the same trend. Help received seemed to be directly related to contact--the more contact, the more help. The report of "great help" among teachers conversing with the Volunteer twice a week during the semester was 51.5 per cent; among those conversing once a week, 59.0 per cent; among those conversing once every two weeks, 51.3 per cent; among those conversing less than once every two weeks, only 42.2 per cent; and among those conversing rarely, a mere 24.3 per cent. Except for the slight rise at the beginning of the scale (for "once a week"), of no relevance to our present interest, the data is completely clear-cut: contact led to help, as the extremes dramatize (51.5 per cent vs. 24.3 per cent). This further bolsters the conviction that help, as reported by the teachers, actually represents an aspect of the Volunteer's behavior, and not simply a meaningless, conforming reply.

We next broke down the occurrence of the 14 problems by degree of help received from the Volunteer. The purpose was to determine whether the Volunteer's help actually had any benefits for the teacher in regard to the problems brought by television. *What we found constitutes a major finding in regard to Volunteer effectiveness: There was an overwhelmingly convincing association between Volunteer help and the minimization of problems. The evidence was completely* consistent with the belief that the utilization Volunteer had dramatically enhanced the successful functioning of instructional television in Colombia.

Of the 14 problems, 13 were shown to decrease significantly as a function of help from the Volunteer. The sole exception was conflict with religious activities, one of the problems whose general occurrence was so slight that it could not be considered to be of much general importance (and which, unlike most of the other problems, may simply have reflected hostility toward the program since its solution would only have required the tailoring of schedules by the teacher). Of the 13, the relationship was highly significant in 11 of the instances ($p. < .001$, two-tailed); in the others, statistical significance was at a lower but nonetheless convincing level ($p. < .01$ and .05, two-tailed).

The consistency of the results was striking. In 10 of the instances the trend over the four degrees of help ("great help," "some help," "a little help," and "no help") was progressive, with problems increasing with each step as help decreased. In the other three instances, the deviations from a progressive trend were minor and of no consequence.

The importance of Volunteer help was particularly noteworthy for eight of the problems. This can be illustrated by comparing the differences between problem occurrence for the two extremes of help--

"great help" vs. "no help." These figures are (the per cent of problems for "great help" comes first, followed by that for "no help"; the higher the per cent, of course, the greater the occurrence of the problem): insufficient seats (34.9 vs. 54.0); overcrowding in the television room (24.3 vs. 39.2); the television room not being dark enough (22.9 vs. 51.1); insufficient time for "motivation" and "follow-up" (20.3 vs. 39.6); confusion and loss of time from room changing (23.1 vs. 48.7); poor sound reception (18.3 vs. 40.0); TV set adjustment (14.8 vs. 30.2) and TV set failure (10.9 vs. 25.3). For these problems, all generally quite frequent and at their face value quite important for the effective functioning of instructional television, the increase for "no help" over "great help" ranges from about 60 per cent to well over 100 per cent. These problems come from all three of the broad problem classifications--physical facilities, organization, and television technology.

The impact of the Volunteer in regard to some of the 13 problems whose disruption was inversely related to his help may be confusing if the scope of the Volunteer's activities is not understood. The most glaring example is electricity failure. Ordinarily, this kind of problem, related either to school wiring or local power service, might seem to be completely beyond the influence of the Volunteer. However, although this was not a problem on which he had a dramatic impact over the entire sample, this was often far from the case. In the ETV Project, the utilization Volunteer acted as a catalyst, an organizer, a coordinator, a prompter, and, when necessary, a representative of the school with higher officials. Often, in regard to electrical power for television, he was instrumental in obtaining repairs to the school or crucial changes in the local scheduling of power service (which often is limited to certain hours of the day in rural areas).

Since in the final 1965 survey we were dealing with a highly non-homogeneous sample in regard to time of entry into the ETV Project, intensity of Volunteer effort in the various areas in the receiving network at the time of the survey, and frequency of actual contact with the Volunteer on the part of the teacher, we were concerned that our findings on Volunteer help might be artifacts of the composition of our sample. Under the circumstances, it would be quite reasonable to suspect that the high occurrence of problems for the lesser degrees of help could be explained by the presence of large numbers of teachers from areas receiving intermediate and low amounts of Volunteer attention generally (where help also would be less), or by the presence of large numbers of teachers having relatively little contact with the Volunteer which these areas contributed to the sample (for whom help also would be less).

If so, this would muddy the issue considerably. Of course, we might still be able to say that intensity of effort in an area or contact was associated with reduced problems, but we would not be able to separate these (or help) from recency of entry into the television program. As a result, there would remain the quite plausible possibility that the smoother functioning of the program in the schools was not attributable to assistance given personally by the utilization Volunteer, but to special characteristics of the newer areas or (even more likely) to the ever-improving operational practices of the ETV Project--more complete pre-introduction orientation of teachers, better school selection, greater assistance from local officials, and the like.

As a result, we subjected our data on the impact of Volunteer help to further rigorous scrutiny. We did this, in effect, by examining the effects of help on the occurrence of problems while we held constant general intensity of Volunteer effort in an area (roughly synonymous with time of entry into the program) and individual teacher contact with the Volunteer. In neither case did we find anything to cause us to modify our findings on the impact of the Volunteer.

We found that Volunteer help reduced problems regardless of the overall level of intensity of Volunteer effort in area (or time of entry into the program), which strongly increased our confidence that the relationship found between help and reduced problems is a true one. The finding that Volunteer help reduced problems regardless of the degree of actual contact had the same effect, and also indicated that help can be considered apart from contact and (from a more technical viewpoint) can be justifiably used as a measure of Volunteer impact.

It will be recalled that we found that for the total sample help increased with actual contact. We subjected this finding to the same kind of scrutiny by breaking down the data of intensity of Volunteer effort for an area as a whole, as above. What we found was that Volunteer help increased with actual contact within each of the three breakdowns (high, intermediate, and low overall intensity of effort, ranging from most to least recent entry into the program). This indicated that contact can be considered an important determinant of help, although, as suggested previously, the Volunteer can offer some help even when contact is slight.

Turning to findings on other issues, we found that teacher desire for more frequent contact with the Volunteer than he had had during the past semester was inversely related to actual contact. That is, *those teachers who had had relatively little contact were especially demanding of more contact*. We also found that *teachers with relatively frequent actual contact overwhelmingly wanted at least as much in the future*. In addition, we found that the demand for more frequent contact increased as the amount of help received decreased. That is, *teachers who had received relatively little help were especially* demanding of more contact. The broad implication of these findings is very high teacher demand for the utilization Volunteer's services.

In addition to the data on school television problems and the performance of the utilization Volunteer, we also presented some findings on teacher communicatory behavior related to the Peace Corps television project. These were of two kinds. One concerned the teachers' preferences as to communicatory targets for comments, complaints, and suggestions about the television program. The other concerned the teachers' actual regular communication about the program.

In measuring the teachers' preferences as to communicatory targets, we were actually measuring their perception of who had a meaningful say in the operation of the project. What we were finding out was who the teachers looked to when they were concerned in some way about the new instruction.

At the end of the project's inaugural semester in 1964, an overwhelming majority of about 85 per cent of the teachers named the Volunteer. What was equally striking at the same time was that very few named a Colombian person or agency. The highest figures were for the Instituto de Radio y Television (the semi-official agency under whose auspices broadcasting took place), with about 13 per cent; the district school supervisor, with about 12 per cent; and the school principal, with about 11 per cent. The gulf in preference between the Volunteer and these Colombian targets was enormous. It was clear that at this time the teachers almost entirely conceived of the ETV Project as a Peace Corps enterprise, a possibly gratifying circumstance, but not one especially suggestive of success in making the television project a Colombian undertaking, as the Peace Corps eventually wished to do.

By the end of the project's fourth semester, the final semester of 1965, the picture was very different. The majority naming the Volunteer had dropped to about 62 per cent. More important, a new Colombian official whose post had been developed in the interim, the special Department level school supervisor for instructional television, now was a firm second with about 46 per cent. In addition, the naming of other Colombian persons and agencies rose dramatically. The Instituto de Radio y Television now received about 24 per cent; the district school supervisor, about 26 per cent; and the school principal, about 26 per cent.

With the 1964 figures as a standard, these 1965 results clearly represent an impressive gain for the Peace Corps in making the instructional television program a Colombian undertaking. Of course, it must be recognized that the Volunteer is always likely to rate fairly highly in absolute terms in this kind of measurement as long as he is giving such direct attention to schools on behalf of ETV. What is really noteworthy is the great shift toward Colombian figures.

There was a marked increase in the readiness of the teachers to look toward Colombian persons and agencies. In particular, these 1965 results reflected considerable success for the Peace Corps with the device of arranging for Department level school officials to be responsible for television in the schools, an adaptation on the part of the Peace Corps to Colombia's regionalism and the failure of the national government to provide school level support.

In measuring the teachers' actual communication about the television program, we were simply interested in the communication generated by this educational innovation. We found that the teachers said they conversed regularly about the new program to this extent in our final 1965 survey (whose results on this point were about the same as for the other surveys): about 77 per cent with other teachers in their own school; about 56 per cent with their school's principal; about 45 per cent with teachers in other schools; about 31 per cent with friends; about 24 per cent with the district school supervisor; about 19 per cent with the special Department level school supervisor for ETV; and about 17 per cent with the parents of their pupils. Given the impact of television on the school's operation, we were not surprised that regular conversation was most frequent with their fellow teachers. However, we were favorably impressed with the figures for teachers in other schools, friends, and parents, for we suspect that much of this communication about an education topic would not have taken place without the television project. In short, we see these results as indicating the generation of considerable educational discussion by the ETV Project, a definitely desirable by-product.

Of course, the figures for the special Department level television supervisor are relatively low because there were only 13 of these officials for the approximately 925 schools with 7,000 teachers in the program at the time, and opportunity for discussion was limited and largely a function of proximity to the Department capital where the official was headquartered. Given that only about 19 per cent conversed with him regularly, the fact that about 46 per cent, more than twice as many, named him as a target is even more impressive evidence of his success as a means of encouraging the teachers to look toward Colombian figures in regard to ETV.

We also investigated whether the help given by the utilization Volunteer might have a hidden liability by decreasing the likelihood that the teacher would look toward the special Department television supervisor in regard to ETV. We tested this by examining data from the area that had been introduced to television during the semester covered by our final 1965 survey. This promised the best data for this purpose for two reasons: as the latest addition to the project, the perception of the supervisor's role could be taken as more typical of what could be expected, and as the teachers were receiving generally intensive attention for the first time, they were maximally susceptible to any side-effects. What we found was that help from the Volunteer actually facilitated orientation toward the special Colombian television supervisor: teachers who had received "great help" from the Volunteer were significantly more inclined to name the supervisor as a communicatory target than those who had received a lesser degree of help. Presumably, this occurred because of the information given the teachers about the project and the greater involvement their attention brought about. In practical terms, what we discover is that help from the Volunteer tends to bring teachers into the new televised program, and when Colombian officials are available within this project on whom they can focus, they will do so.

In addition to our broader investigation of the impact of the utilization Volunteer, we also used our survey data to formulate two case studies bearing on his effectiveness In one, we focused on Ibague, capital of the Department of Tolima. Television was introduced here during the second semester of 1964, the second semester of the project's operation. At the end of this introductory semester, the team of utilization Volunteers was transferred to new sites. In our survey on the following semester, the first semester of 1965 and Ibague's second semester of television, we found that the occurrence of problems here was much higher generally than for the country as a whole. A team of Volunteers was reassigned to Ibague, and with our measurement of problems for the second semester of 1965 we were able to examine the impact of this intensification of Volunteer attention.

What we found was that two important problems generally shown to be reducible by Volunteer help decreased significantly. One was overcrowding in the television room, which fell from 59.0 to 42.2 per cent, a decrease of almost 17 percentage points ($p. < .001$, two-tailed). The other was confusion and loss of time from room changing, which fell from 69.7 to 48.5 per cent, a decrease of about 21 percentage points ($p. < .001$, two-tailed). The first concerned physical facilities, the second organization around television use. This further added to our evidence that the utilization Volunteer can make a very real difference in the success with which instructional television operates in the school.

In the other case, we focused on Medellin, capital of the Department of Antioquia. Television was introduced here during the first semester of 1965. At the end of this semester, the team of utilization Volunteers was much reduced as Volunteers were transferred to new sites. By putting together our data from this semester of intensive Volunteer attention and from the following semester of reduced Volunteer attention (the second semester of 1965), we can assess whether at this time withdrawal of Volunteer attention led to an increase in problems.

We should add that by the time television was introduced in Medellin the introductory procedures had been much improved over those employed in Ibague (although we cannot say that Ibague regressed after Volunteer withdrawal, for we have no comparative figures on its initial semester) There was more thorough, systematic, and comprehensive orientation of teachers prior to the beginning of television: there was better, more demanding selection of schools (on the basis of facilities and willingness to cooperate); the office of the Department television supervisor was more fully developed (it had been first tried with the inauguration of television in Ibague); cooperation with all local school officials was on a firmer basis; and the Volunteers, in their third semester, were at their peak of experience (shortly after the end of this semester, the term of service of the inaugural ETV group would end).

What we found was extremely encouraging from the viewpoint of project operation. There was absolutely no evidence that problems increased after Volunteer attention dropped. What this suggests is that with a sound introductory program, television can be sufficiently firmly established so that continuing intensive Volunteer attention is not necessary to maintain what has been achieved. Of course, we should note that conditions were relatively favorable for ETV in Medellin, since it is a prosperous and progressive commercial city with good electrical service, quite well-equipped schools, and fairly zealous educational officials. In other circumstances (for which we have no data), the outcome might be different.

We also reported on the teachers' ratings of the Volunteer on two counts--the quality of the Volunteer's advice, and the adequacy of his preparation. In our final 1965 survey, we found on quality of advice that about 48 per cent felt the Volunteer's advice was "good and practical," about 31 per cent felt it was "impractical because equipment and resources were lacking," about 14 per cent felt it was "unclear," about 5 per cent felt it was both "impractical and unclear," and about two per cent felt it was simply "no good." When we broke down these replies by degree of help given, we found marked differences that give some insight into why the Volunteer sometimes fails to be helpful. Among teachers receiving "great help," about 67 per cent said that the Volunteer's advice was "good and practical," compared with only about 33 per cent among those receiving lesser degrees of help. The difference was primarily attributable to sharp rises in the two relatively specific complaint categories, both in regard to impracticality (about 25 per cent among teachers receiving "great help" vs. about 36 per cent for the others) and lack of clarity (about 4 per cent among teachers receiving "great help" vs. about 21 per cent among the others), rather than in the blanket "no good" category. In short, teachers found that the Volunteer could not help them when his advice failed to take into account the feelings of the teacher about the limited resources available or was simply too vague and unspecific for action.

In the same survey, we found on Volunteer preparation that about 51 per cent complained that the Volunteer should know more about the problems of the Colombian school teacher, about 45 per cent complained that the Volunteer should speak better Spanish, and 21 per cent complained that the Volunteer should know more about teaching practices. Again, differences appear when we break down the replies by degree of help received. Teachers receiving less help were more critical on all three counts. Among those receiving "great help," about 44 per cent complained about knowledge of the Colombian teacher's problems, vs. about 55 per cent for teachers receiving less help; for Spanish, the comparable figures are about 36 per cent ("great help") vs. about 50 per cent (less help); for knowledge of teaching practices, they are about nine per cent ("great help") vs. about 27 per cent (less help). Perceived deficiency in all of these areas, then, seemed to adversely affect the Volunteer's capability to help the teacher.

We concluded the report with a thorough analysis of the actual degree of contact that occurred between Volunteers and teachers. Contact, of course, has great importance since it is a necessary condition for help, and because help increases with greater contact.

One of our major findings was that as a project of this kind grows, its power to expand and serve its teachers declines unless the number of utilization Volunteers increases. This occurs because each new area absorbs additional Volunteers in administrative and coordinating positions, and because in each area some Volunteers generally remain to work full-time in schools to maintain and further expand the receiving network on a more limited basis than during the area's introductory semester.

We also found that a fairly sizable number of teachers were largely ignored even during the relatively intensive introductory semester. In the area being introduced to television in the survey for the first semester of 1965, 32 per cent of the teachers reported conversing with the Volunteer "rarely" and 19 per cent of the teachers reported that the Volunteer visited their school "rarely." In the area being introduced to television in the survey for the second semester of 1965, 40 per cent reported conversations, and 20 per cent reported school visits, as occurring "rarely." Given the scale by which we measured contact, "rarely" means once a month at the very maximum, and in most instances probably less, so that the degree of contact with these teachers really was slight.

This suggested that the distribution of Volunteer contact requires very close attention, both on the part of staff and Volunteers, for attention to one teacher or school, with the number of Volunteers available, is at the expense of attention elsewhere. This also suggested that attention should be given to the development and use of time-saving procedures that would permit the Volunteer to communicate with more teachers with the same expenditure of time, such as group sessions. These figures occurred with about 12 Volunteers to introduce television to somewhat more than 200 schools with about 2,000 teachers, indicating that a ratio of one Volunteer to about 17 schools is barely adequate.

We also found that attention to a school did not guarantee equal attention to all teachers in a school. One implication of this is that when individual contact with teachers is desired, the use of the school as a unit for organizing work is likely to be deceptive. This also led us to observe that while contact with only the principal or a few teachers may be adequate for ameliorating certain types of operational problems (physical facilities, organization, and technology), it is extremely unlikely that teaching practices can be changed unless there is actual communication with the teacher. With so much time given to operational problems, and a limited number of Volunteers, this tends to strengthen the argument for increased use of group procedures to save time. It also shows that the opportunity to affect teaching practices actually has to be very slight, even in schools receiving considerable attention.

We also noted that the figures on contact for areas being introduced to television were not descriptive of the entire project at any time, for contact would be less in other, previously introduced areas.

For example, in our final 1965 survey, we found that as we moved from the new areas to those with an intermediate amount of attention (introduced to television during the preceding two semesters), and finally to the areas with a low amount of attention (introduced to television during the project's inaugural semester), the report of rare conversations rose from 40 to 49 to 76 per cent, and the report of rare school visits rose from 20 to 40 to 72 per cent. It is not surprising that contact was relatively infrequent for these previously introduced areas, for they had over 1,000 schools in the program, and of the total of 47 utilization Volunteers in the country at the time, 12 were in the new areas, and nine were in coordinating positions, leaving only 26 Volunteers to serve them.

Given the limits so far on the power of the utilization Volunteer to change teaching practices, this low degree of contact throughout the project generally suggests that there would be a worthwhile task for added numbers of utilization Volunteers to concentrate on this goal. We should also add that although our data show clearly that the utilization Volunteer can reduce television problems in the schools, the same data also show that such problems remain far too frequent for complacency. This finding, too, suggests that there would be a useful task for added numbers of Volunteers. In any case, the data on contact lead one to question whether the number of Volunteers at the end of 1965 was sufficient.

FOOTNOTES

[1] For a full review of Peace Corps and Colombian personnel in the ETV Project and their various duties, see Report No. 1 (*), this series.

[2] These courses covered such subjects as Natural Science, Social Science, Mathematics, and the like. The courses in a subject were different for each grade. Colombian public elementary schools cover the first five grades. For a complete review of the televised curriculum, see Report No. 1 (*), this series.

[3] For the results of this field experiment, see Report No. 2 (*), this series.

[4] For the results of this experiment on teaching techniques, see Report No. 3 (*), this series.

[5] For the results of this experiment on persuasive tactics, see Report No. 7 (*), this series.

[6] For this "critical incident" analysis and a sample of over 100 incidents, see Report No. 5 (*), this series.

[7] For the results of this first semester study, see Report No. 2 (*), this series.

[8] For the teachers' reactions to the televised courses, see Report No. 8 (*), this series.

[9] For a technical discussion, see Harman, H. H., Modern Factor Analysis (Chicago: University of Chicago Press, 1960). A somewhat more detailed non-technical discussion can be found in Report No. 9 (*), this series, where we make more extensive use of a factor analysis.

[10] Over-crowding and insufficiency of seats are often related, of course, as the factor analysis indicates. However, they are not the same thing since lack of adequate furnishings is frequently a problem in Colombian schools. Thus, despite some overlap, we treat each as a separate problem.

[11] These 13 include two "national ETV supervisors" who in practice functioned at the time as Departmental or local supervisor for ETV in the capital of Bogota and the surrounding Department of Cundinamarca. The development of this position and the role of these officials is also discussed in Report No. 1 (*), this series.

[12] Memo distributed to all ETV Volunteers at the end of 1965 by Stanley Handleman, director of the ETV Project for the Peace Corps.

Reports In This Series

This series supplants all previous reports on the two years of research conducted on the Peace Corps Educational Television Project in Colombia. There are 12 volumes -- 10 research reports, each dealing with a different aspect of the project, plus *An Introduction*, concerned with the organization and conduct of the research, and a concluding *Overview*, containing a summary of the major findings and some general observations on the project.

The title of the series: *The Peace Corps Educational Television Project in Colombia -- Two Years of Research*.

The individual volumes:

An Introduction to Research Reports No. 1-10.

Report No. 1: The Project as a Whole -- Organization, Expansion, and Adaptation.

Report No. 2: The Project's First Semester -- Pupil Achievement, Teacher Attitudes, and the Work of the Utilization Volunteer.

Report No. 3: Improving the Effectiveness of the Utilization Volunteer and the Utilization of ETV by the Colombian Teacher.

Report No. 4: The Colombian Teacher and the Utilization Volunteer -- Making ETV Work in the Schools of a Developing Country.

Report No. 5: The Day-to-Day Job of the Utilization Volunteer -- Structure, Problems, and Solutions.

Report No. 6: Instructional Television for the In-Service Training of the Colombian Teacher.

Report No. 7: Improving the Effectiveness of Peace Corps Efforts to Change Teacher Behavior.

Report No. 8: The Televised Curriculum and the Colombian Teacher.

Report No. 9: The Volunteers.

Report No. 10: Feedback to the Peace Corps on Project Progress -- Some Models and Suggestion.

An Overview of Research Reports No. 1-10.

BRIEF FACTS

The ETV Project: In 1963, the Peace Corps, with the financial support of the Agency for International Development (AID), agreed to help the Colombian government establish a nationwide educational television (ETV) system directed primarily at improving public education. The initial Peace Corps goal was to provide televised instruction for primary school pupils and their teachers. It was hoped that eventually the system could also provide instruction for adults in literacy, health, agriculture, and topics of general interest, and for students beyond the primary grades. The ultimate Peace Corps goal is to establish an ETV system operated independently by Colombia. The project was inaugurated in Colombia at the beginning of 1964. It has had two major concerns in achieving its initial goal: the production of televised courses, and the building of a receiving network of schools with television in which teachers would build their own teaching around the instructional "core" provided by the telecasts. During the project's first three years (1964-1966), the number of Volunteers assigned to the project by the Peace Corps who have worked closely with Colombians toward these goals has ranged from 66 to 88. Of these, about half a dozen have been concerned with the installation and maintenance of TV sets in schools, between slightly more than half to two-thirds working with teachers in schools on making ETV more effective, and the rest with the production of telecasts. During the first year, 10 courses were telecast for pupils, each consisting of two 15 minute telecasts a week, for a weekly total of 300 minutes, exclusive of repeated programs; during 1965 and 1966, 15 such courses were telecast, for a weekly total of 450 minutes exclusive of repeated programs. In addition, individual programs and short courses have been telecast for teachers. When telecasting began in February, 1964, the receiving network encompassed approximately 200 schools, 1,000 teachers, and 38,000 pupils; by the end of 1964, 500 schools, 4,025 teachers, and 153,000 pupils; by the end of 1965, 925 schools, 7,000 teachers, and 260,000 pupils; and by the end of this year, 1,250 schools, 8,500 teachers, and 350,000 pupils. Telecasting has been over the open network of the Instituto de Radio y Television, a semi-government agency which telecasts commercially in the evenings, and which also has provided studio facilities for ETV. To achieve its ultimate goal, the Peace Corps has been concerned with building a permanent, financially viable, and competent organization to assume the Volunteers' functions. At present, Peace Corps participation is planned to continue up to the middle of 1968. For more on the ETV Project itself, see Report No. 1: The Project as a Whole -- Organization, Expansion, and Adaptation, this series.

The Research: Because Colombia was the first country in which the Peace Corps undertook an educational television (ETV) project, it decided to provide for close, thorough, and continuing research, and late in 1963 contracted with Stanford University's Institute for Communication Research. The Institute maintained a staff in Colombia actively engaged in research for the first two years of the ETV Project, from January, 1964, through January, 1966. The titles of the final series of reports on its studies appear on the previous page. For more on the research as a whole, see An Introduction to Reports No. 1-10, this series.